FEBRUARY 1983 NUMBER 462 -- Part I

P-A STACKS

Astronomy
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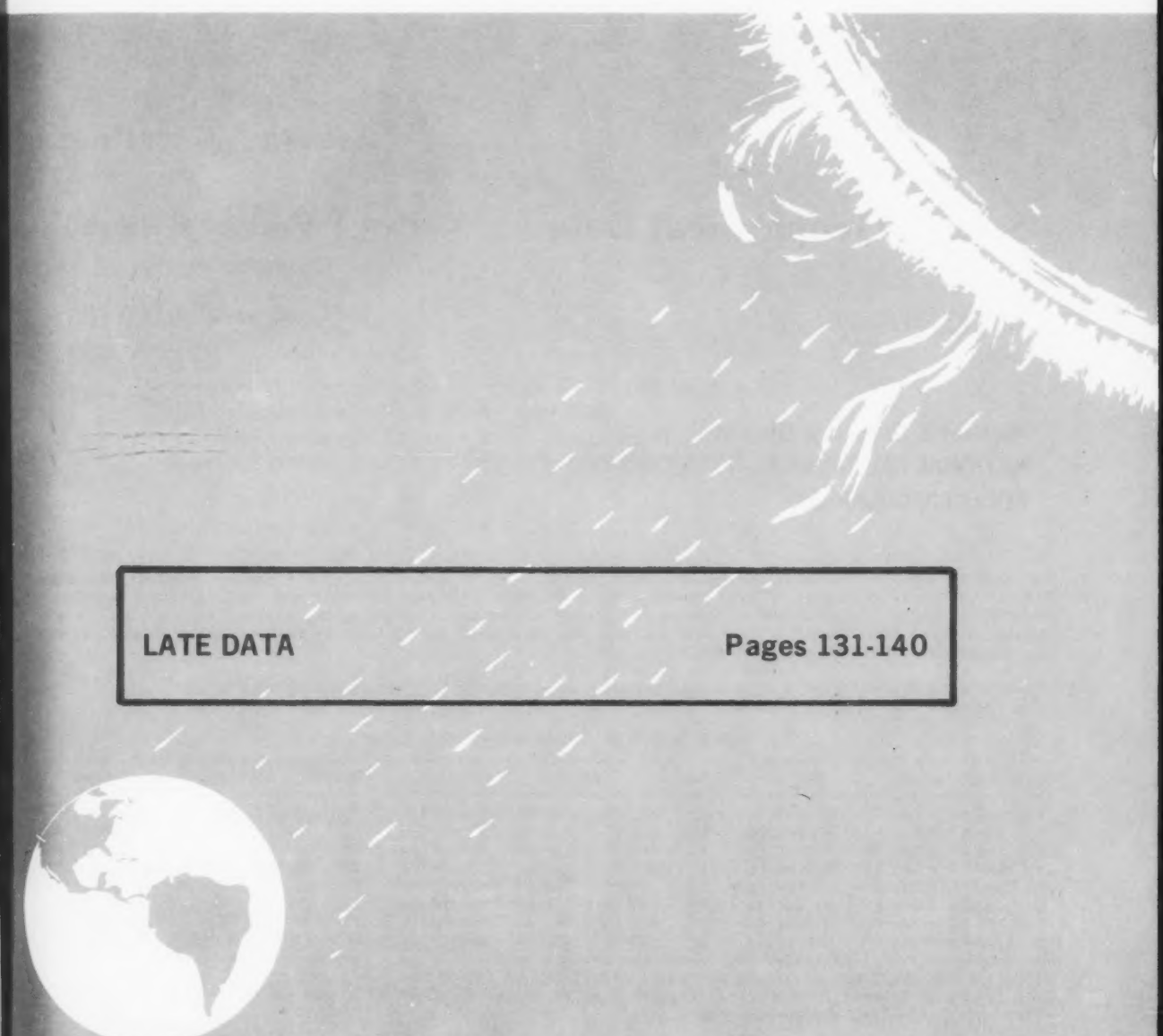
Solar-Geophysical Data prompt reports

Data for January 1983, December 1982 & Late Data
Explanation of Data Reports Issued as Number 462 (Supplement) February 1983



LATE DATA **Pages 131-140**

noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ENVIRONMENTAL DATA AND INFORMATION SERVICE / NATIONAL GEOPHYSICAL DATA CENTER

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Solar - Geophysical Data

Part I (Prompt Reports)

NO. 462 FEBRUARY 1983

DATA FOR
JANUARY 1983
DECEMBER 1982

Michael A. Chinnery, Director
NATIONAL GEOPHYSICAL DATA CENTER
BOULDER, COLORADO

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SOLAR-GEOPHYSICAL DATA

No. 461

Issued in two parts

Helen E. Coffey, Editor

Joe H. Allen, Chief
Solar-Terrestrial Physics Division

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CODE	KIND OF OBSERVATION	1982 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	1983 JAN
A.	**SOLAR AND INTERPLANETARY PHENOMENA**													
A.1	Sunspot Drawings	451A 58	452A 50	453A 40	454A 44	455A 64	456A 58	457A 50	458A 48	459A 44	460A 52	461A 58	462A 44	
A.2aa	International Provisional Relative Sunspot Numbers Ri	450A 11	451A 11	452A 11	453A 11	454A 9	455A 11	456A 9	457A 9	458A 9	459A 9	460A 11	461A 11	462A 11
A.2c	American Relative Sunspot Numbers Ra	450A 11	451A 11	452A 11	453A 11	454A 9	455A 11	456A 9	457A 9	458A 9	459A 9	460A 11	461A 11	462A 11
A.3a	Mt. Wilson Magnetograms	451A 58	452A 50	453A 40	454A 44	455A 64	456A 58	457A 50	458A 48	459A 44	460A 52	461A 58	462A 44	
A.3b	Mt. Wilson Magnetic Characteristics of Sunspots	451A120	452A106	453A102	454A104	455A126	457A166	457A112	458A110	459A105	460A 83	461A 88	462A 75	
A.3c	Kitt Peak Magnetograms	451A 58	452A 50	453A 40	454A 44	455A 64	456A 58	457A 50	458A 48	459A 44	460A 52	461A 58	462A 44	
A.3d	Mean Solar Magnetic Field (Stanford)	450A 34	451A 50	452A 42	453A 32	454A 32	455A 56	456A 48	457A 42	458A 38	459A 36	460A 44	461A 52	462A 34
A.3e	Stanford Magnetograms	451A 58	452A 50	453A 40	454A 44	455A 64	456A 58	457A 50	458A 48	459A 44	460A 52	461A 58	462A 44	
A.4	H-alpha Filtergrams	451A 58	452A 50	453A 40	454A 44	455A 64	456A 58	457A 50	458A 48	459A 44	460A 52	461A 58	462A 44	
A.5	Calcium Plage Drawings - Mt. Wilson or Big Bear	450A 42	451A 58	452A 50	453A 40	454A 44	455A 64	456A 58	457A 50	458A 48	----	----	----	
A.5a	Calcium Plage (Mt. Wilson or Big Bear) and Sunspot Regions	451A120	452A106	453A102	454A104	455A126	457A166	457A112	458A110	----	----	----	----	
A.5b	Mt. Wilson or Big Bear Daily Calcium Plage Indices	451A135	452A118	453A113	454A117	455A138	457A176	457A122	458A119	----	----	----	----	
A.6	H-alpha Synoptic Charts	451A 54	452A 46	453A 36	454A 36	456A 52	456A 53	457A 46	458A 42	459A 40	460A 47	461A 54	462A 36	
A.6b	Synoptic Chart and Active Regions (Paris)	458B 43	459B 91	460B154	460B155	462B 92								
A.6c	Stanford Solar Magnetic Field Synoptic Charts	451A 55	452A 47	453A 37	454A 38	455A 61	456A 55	458A 43	458A 44	460A 48	460A 49	461A 55	462A 38	
A.6d	Kitt Peak Solar Magnetic Field Synoptic Charts	451A 56	452A 48	453A 38	454A 40	455A 62	456A 56	457A 48	458A 45	459A 42	460A 50	461A 56	462A 40	
A.6e	Mass Ejections from the Sun	459B 32	460B 83	457B 75	458B 40	459B 37	460B113	461B 94	462B 52					
A.7f	Helium D3 Chromosphere (Big Bear)	----	----	----	----	----	----	----	----	----	----	----	----	----
A.7g	Helium Synoptic Maps (KPNO)	451A 57	452A 49	45A144	454A 42	455A 63	456A 56	457A 49	458A 47	459A 43	460A 51	461A 57	462A 42	
A.7h	Coronal Line Emission (Sac Peak)	451A 58	452A 50	453A 40	454A 44	455A 64	456A 58	457A 50	458A 48	459A 44	460A 52	461A 58	462A 44	
A.8aa	2800 MHz - Daily Values of Solar Flux (ARO-Ottawa)	450A 11	451A 11	452A 11	453A 11	454A 9	455A 11	456A 9	457A 9	458A 9	459A 9	460A 11	461A 11	462A 11
A.8ac	2800 MHz - Daily Values of Adj. Solar Flux (ARO-Ottawa)	450A 11	451A 11	452A 11	453A 11	454A 9	455A 11	456A 9	457A 9	458A 9	459A 9	460A 11	461A 11	462A 11
A.8g	Daily Values of Adjusted Solar Flux (AFGL)	450A 11	451A 11	452A 11	453A 11	454A 9	455A 11	456A 9	457A 9	458A 9	459A 9	460A 11	461A 11	462A 11
A.10a	169 MHz - Interferometric Observations (Nancay)	450A 23	452A162	452A 28	455A162	454A 21	455A 30			458A 25	459A 26	460A 28	461A 32	462A 24
A.10c	21 cm East-West Solar Scans (Fleurs)	450A 26	451A 33	452A 31	----	----	455A 33	456A 30	457A 29	458A 28	459A 28	460A 31	461A 35	462A 27
A.10d	43 cm East-West Solar Scans (Fleurs)	450A 27	451A 34	452A 32	----	----	----	456A 30	457A 30	458A 29	459A 29	460A 32	461A 36	462A 28
A.10e	10.7 cm East-West Solar Scans (Ottawa-ARO)	450A 25	451A 32	452A 30	453A 25	454A 23	455A 32	456A 29	457A 28	458A 27	459A 27	460A 30	461A 34	462A 26
A.10f	3 cm East-West Solar Scans (Toyokawa)	450A 24	451A 31	452A 29	453A 24	454A 22	455A 31	456A 28	457A 27	458A 26		460A 29	461A 33	462A 25
A.10g	8 cm East-West Solar Scans (Toyokawa)	----	----	----	----	----	----	----	----	----	----	----	----	----
A.11g	Solar X-ray (SMS/GOES) (graphs)	455B 26	456B 78	457B 67	458B 35	459B 31	461B 98	461B 88	462B 46					
A.12e	Energetic Solar Particles (IMP H & J) 1980-81													
A.13d	Solar Wind from IPS Measurements	451A169	451A 45	----	----	----	----	----	----	----	----	----	----	----
A.13e	Solar Plasma (IMP H & J)	457B125	457B126	457B 66	458B 34									
A.13f	Solar Wind (Pioneer 12 (Venus))	450A 31	451A 51	452A 43	453A 33	454A 33	455A 57	456A 45	457A 39	458A 39	459A 37	----	----	----
A.17	Interplanetary Magnetic Field (Pioneer 12)	452A163	452A123	455A175	455A175	455A142	----	457A129	458A124	459A130	461A136	462A132		
A.17c	Inferred IP Magnetic Field	450A 32	451A 48	452A 40	453A 30	454A 30	455A 54	456A 46	457A 40	458A 36	459A 34	460A 42	461A 50	462A 32
B.	**IONOSPHERIC AND RADIO WAVE PROPAGATION PHENOMENA**													
B.52	Graphs of Transmission Frequency Range	451A162	452A158	453A144	454A140	455A158	456A156	457A162	458A148	459A156	460A128	461A132	462A128	
B.53	Quality Figures Based on Frequency Ranges	451A161	452A160	453A143	454A142	455A157	456A158	457A161	458A150	459A158	460A130	461A131	462A130	
C.	**FLARE-ASSOCIATED EVENTS**													
C.1a	Optical Observations Flares	450A 16	451A 16	452A 16	453A 16	454A 14	455A 16	456A 14	457A 14	458A 14	459A 14	460A 16	461A 16	462A 16
C.1ba	Optical Observations Flares (Standardized Data) 1980					457B 76	459B 39	460B116	462B 56					
C.1d	Flare Patrol Observations													
C.1d	Flare Patrol Observations 1980	450A 22	451A 30	452A 27	453A 23	454A 20	455A 29	456A 27	457A 26	458A 24	459A 25	460A 27	461A 31	462A 23
C.1e	Flare Indices (by day) 1980					457B115	459B 87	460B151	462B 89					
C.1f	Flare Indices (by Region) 1980					457B114	459B 86	460B150	462B 88					
C.3	Solar Radio Waves - Outstanding Occurrences*	455B 4	456B 4	457B 4	458B 4	459B 4	460B 4	460B 4	462B 4					
	Solar Radio Waves - Fixed Frequencies - Selected	450A 28	451A 35	452A 33	453A 26	454A 24	455A 34	456A 31	457A 31	458A 30	459A 30	460A 33	461A 37	462A 29
C.4a	Solar Radio Spectral Obs. (Fort Davis)	451A140	452A124	453A118	454A121	455A143	456A124	457A130	458A125	459A131	460A106	461A109		
C.4d	Solar Radio Spectral Obs. (Culgoora)	451A140	452A124	455A163	455A170	455A143	456A124	457A130	458A125	459A131	460A106	461A109	462A 98	
C.4e	Solar Radio Spectral Obs. (Weissenau)	451A140	452A124	453A118	454A121	455A143	456A124	457A130	458A125	459A131	460A106	461A109	462A 98	
C.4f	Solar Radio Spectral Obs. (Sagamore Hill)	451A140	452A124	453A118	454A121	455A143	456A124	457A130	458A125	459A131	460A106	461A109	462A 96	
C.4h	Solar Radio Spectral Obs. (Dwingeloo)													
C.4i	Solar Radio Spectral Obs. (Bleien)	451A140	452A124	454A145								461A109	462A 98	
C.4j	Solar Radio Spectral Obs. (Manila)													
C.4k	Solar Radio Spectral Obs. (Learmonth)	451A140	452A124	453A118	454A121	455A143	456A124	457A130	458A125	459A131	460A106	461A109	462A 98	
C.4l	Solar Radio Spectral Obs. (Palehua)	451A140	452A124	453A118	454A121	455A143	456A124	457A130	458A125	459A131	460A106	461A109	462A 98	
C.5e	Solar X-ray (SMS/GOES) (graphs)	455B 26	456B 78	457B 67	458B 35	459B 31	461B 98	461B 88	462B 46					
C.6	Sudden Ionospheric Disturbances	451A136	452A119	453A114	454A118	455A139	456A118	457A123	458A120	459A126	460A102	461A103	462A 92	
D.	**GEOMAGNETIC AND MAGNETOSPHERIC PHENOMENA**													
D.1a	Geomagnetic Indices Kp, Kn, Ks, Km, Ap, aa, Cp	451A151	452A152	453A136	454A134	455A153	456A149	457A154	459A162	459A150	461A136	461A126	462A121	
D.1ba	27-day Chart of Kp Indices	451A153	452A154	453A138	454A136	455A155	456A151	457A156	458A144	459A152	460A125	461A128	462A123	
D.1c	27-day Chart of Cp	462A124	462A124	462A124	462A124	462A124	462A124	462A124	462A124	462A124	462A124	462A124	462A124	
D.1ca	aa graph 1868 - present													
D.1d	Principal Magnetic Storms	451A159	452A155	453A141	454A139	455A156	456A154	457A159	458A147	459A153	460A126	461A129	462A125	
D.1e	Reduced Magnetograms													
D.1f	Sudden Commencement and Solar Flare Effects	451A160	452A157	453A142	456A160		456A155	457A160	459A164	459A155	460A127	461A130	462A127	
D.1g	Equatorial Indices Dst	452A165	453A148	455A140	454A138	456A160	456A153	457A158	458A146	460A135	462A139	462A140		
D.1h	Geomagnetic Substorm Log (Boulder)	450A 35	451A 52	452A 44	453A 34	454A 34	455A 58	456A 49	457A 43	458A 40	459A 38	460A 41	461A 49	462A 31
F.	**COSMIC RAYS**													
F.1a	Cosmic Ray Neutron Counts (Deep River)	451A151	452A151	453A135	455A177	455A152	456A148	457A153	459A160	459A149	460A119	462A134	462A116	
F.1b	Cosmic Ray Neutron Counts (Climax)	454A150	454A150	454A150	454A131	457A176	457A178		462A133	462A133	462A133	462A134		
F.1e	Cosmic Ray Neutron Counts (Alert)	451A151	452A151	453A135	455A177	455A152	456A148	457A153	459A160	459A149	460A119	462A134	462A116	
F.1h	Cosmic Ray Neutron Counts (Thule)	451A151	452A151	453A135	454A131	455A152	456A148	457A153	458A143	459A149	460A119	461A123	462A116	
F.1i	Cosmic Ray Neutron Counts (Kiel)	451A151	452A151	453A135	454A131	457A178	457A178	457A153	458A143	459A149	460A119	461A123	462A116	
F.1j	Cosmic Ray Neutron Counts (Tokyo)	451A151	452A151	453A135	454A131	457A178	457A178	457A153	458A143	459A149	460A119	461A123	462A116	
F.1l	Cosmic Ray Neutron Counts (Huancayo)	454A150	454A150	454A150	457A176	457A178								
H.	**MISCELLANEOUS**													
H.60	IUWDS Alert Decisions	450A 5	451A 5	452A 5	453A 5	454A 4	455A 5	456A 4	457A 4	458A 4	459A 4	460A 5	461A 4	462A 5

Notes:

"451A 58" listed under 1982 Jan means that the sunspot drawings for Jan 1982 were contained in Solar-Geophysical Data Number 451 - Part I, beginning on page 58.

A = Part I, B = Part II.

----- = no data available.
blank = data not yet received.

*Solar radio noise bursts observed at Athens, Learmonth, Manila, Palehua and Sagamore Hill during Aug 1979 through Oct 1980 appear in Solar-Geophysical Data, Number 461, Part II, pages 103-2135.

JANUARY 1983 DATA

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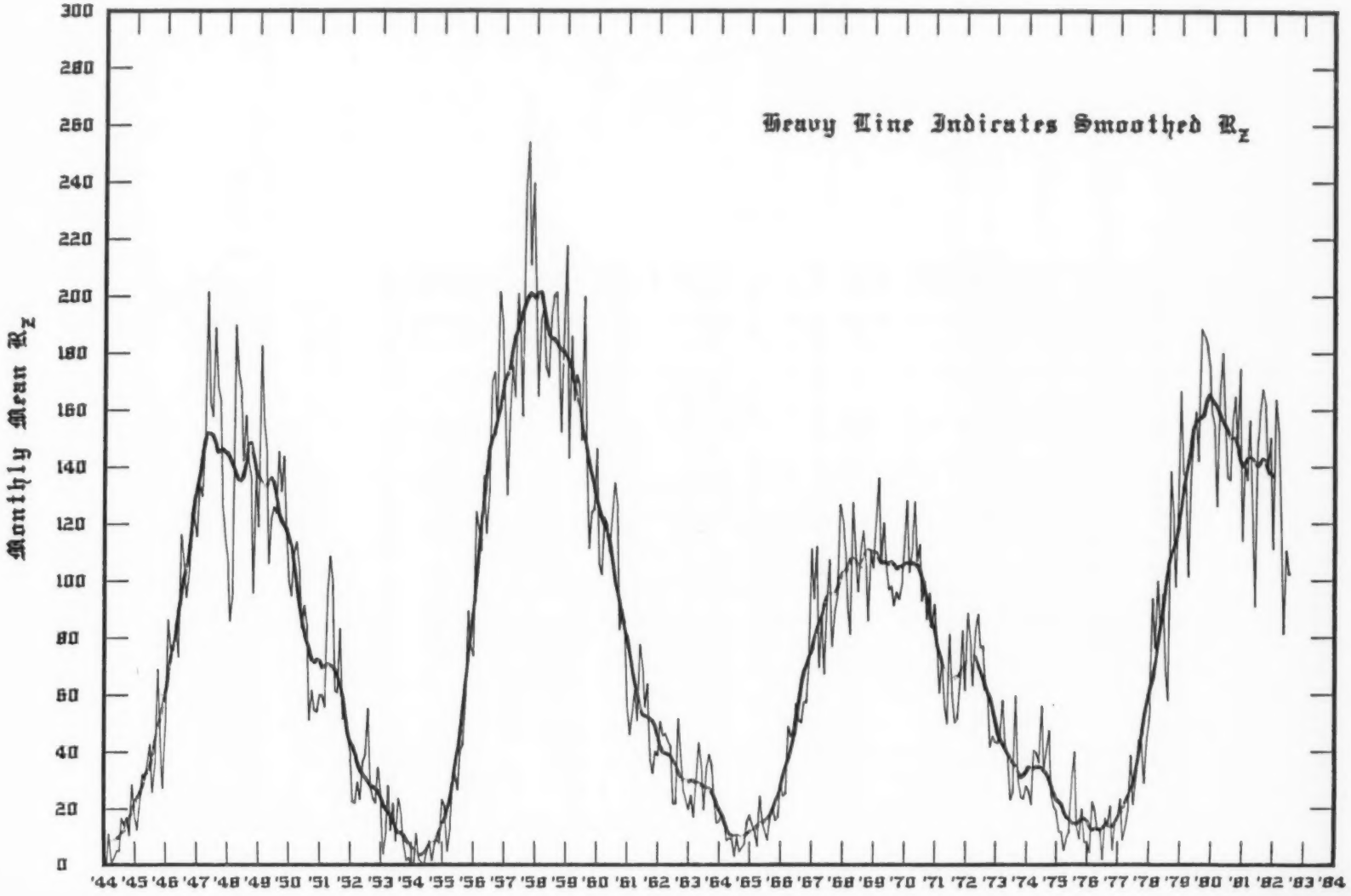
Monthly Mean Zürich Sunspot Numbers
January 1944 – July 1982



ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE
JANUARY 1983

SUMMARY OF THE GEOALERT MESSAGES

NO	DI	DO	WOLF	10CM	A	LOC	TOT	M	X	OUTSTANDING EVENTS	DA	LOC	DE	ALERTS
001	01	31	103	139	009	S19W56	1	0	0		01	S19W56	Q	SOLNIL
						S13W56	6	0	0			S13W56	A	MAGQUIET
						S02W31	0	0	0			S02W31	Q	
						S17W26	0	0	0			S17W26	Q	
						N06E28	2	0	0			N06E28	Q	
002	02	01	121	136	011	S13W69	7	0	0		02	S13W69	E	SOLQUIET
						S27W40	1	0	0			S27W40	Q	MAGQUIET
						N08W01	0	0	0			N08W01	Q	
						N24E06	0	0	0			N24E06	Q	
						N07E17	0	0	0			N07E17	Q	
						S16E38	0	0	0			S16E38	Q	
						S15E55	0	0	0			S15E55	Q	
003	03	02	117	136	010	S13W83	1	1	0		03	S13W83	E	SOLQUIET
						S17W54	1	0	0			S17W54	Q	MAGQUIET
						N08W16	0	0	0			N08W16	Q	
						N23W07	0	0	0			N23W07	Q	
						N08E02	0	0	0			N08E02	Q	
						S15E24	0	0	0			S15E24	Q	
						S16E40	1	0	0			S16E40	Q	
						S18E81	0	0	0			S18E81	Q	
004	04	03	094	141	011	N08W32	0	0	0		04	N08W32	Q	SOLQUIET
						N23W20	0	0	0			N23W20	Q	MAGQUIET
						N08W10	0	0	0			N08W10	Q	
						S15E11	0	0	0			S15E11	Q	
						S07E65	1	0	0			S07E65	Q	
						S17E65	0	0	0			S17E65	Q	
005	05	04	088	143	013	N08W46	0	0	0		05	N08W46	Q	SOLQUIET
						N07W24	0	0	0			N07W24	Q	MAGQUIET
						S15W03	0	0	0			S15W03	Q	
						S08E09	0	0	0			S08E09	Q	
						S08E53	0	0	0			S08E53	Q	
						S15E57	2	0	0			S15E57	Q	
006	06	05	132	160	009	N06W39	0	0	0		06	N06W39	Q	SOLQUIET
						S15W17	1	0	0			S15W17	Q	MAGQUIET
						S08W05	0	0	0			S08W05	Q	
						S07E40	0	0	0			S07E40	Q	
						S14E44	1	0	0			S14E44	Q	
						N11E57	1	0	0			N11E57	Q	
						S07E61	0	0	0			S07E61	Q	
						S08E77	0	0	0			S08E77	Q	
007	07	06	179	170	005	N05W42	0	0	0		07	N05W42	Q	SOLQUIET
						S16W31	2	0	0			S16W31	Q	MAGQUIET
						S18W08	0	0	0			S18W08	Q	
						S12E13	0	0	0			S12E13	Q	
						S08E26	0	0	0			S08E26	Q	
						S16E26	0	0	0			S16E26	Q	
						S15E30	6	0	0			S15E26	Q	
						N10E40	1	0	0			N10E40	Q	
						S08E48	0	0	0			S08E48	Q	
						S09E65	1	0	0			S09E65	Q	
008	08	07	120	169	006	N24W72	0	0	0		08	N24W72	Q	SOLQUIET
						N06W64	1	0	0			N06W64	Q	MAGQUIET
						S16W44	6	0	0			S16W44	E	
						S18W21	0	0	0			S18W21	Q	
						S12W00	0	0	0			S12W00	Q	
						S08E12	0	0	0			S08E12	Q	
						S16E14	0	0	0			S16E14	Q	
						S14E18	2	0	0			S14E18	E	
						N10E31	3	0	0			N10E31	E	

'44 '45 '46 '47 '48 '49 '50 '51 '52 '53 '54 '55 '56 '57 '58 '59 '60 '61 '62 '63 '64 '65 '66 '67 '68 '69 '70 '71 '72 '73 '74 '75 '76 '77 '78 '79 '80 '81 '82 '83 '84

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE
JANUARY 1983

SUMMARY OF THE GEOALERT MESSAGES

NO	DI	DO	WOLF	10CM	A	LOC	TOT	M	X	OUTSTANDING EVENTS	DA	LOC	DE	ALERTS
						S08E35	0	0	0			S08E35	Q	
						S08E51	0	0	0			S08E51	Q	
009	09	08	177	165	007	N06W80	0	0	0		09	N06W80	Q	SOLQUIET
						S17W58	4	0	0			S17W58	E	MAGQUIET
						S17W39	0	0	0			S17W39	Q	
						S07W02	0	0	0			S07W02	Q	
						S17E02	0	0	0			S17E02	Q	
						S13E04	4	0	0			S13E04	Q	
						N23E15	0	0	0			N23E15	Q	
						N09E16	0	0	0			N09E16	Q	
						S07E18	0	0	0			S07E18	Q	
						S09E34	11	0	0			S09E34	Q	
						N22E51	0	0	0			N22E51	Q	
010	10	09	159	155	015	N06W92	0	0	0		10	N06W92	Q	SOLQUIET
						S16W71	6	0	0			S16W71	E	MAGALERT 10
						S17W52	0	0	0			S17W52	Q	
						S07W14	0	0	0			S07W14	Q	
						S17W12	3	0	0			S17W12	Q	
						S12W10	1	0	0			S12W10	Q	
						N22E00	0	0	0			N22E00	Q	
						S07E05	0	0	0			S07E05	Q	
						S08E21	1	0	0			S08E21	E	
011	11	10	146	149	060	S16W84	1	0	0	PRESTO STRONG MAGSTORM IS	11	S16W84	E	SOLQUIET
						S07W29	0	0	0	SUBSIDING 10/1435Z A>=50		S07W29	Q	MAGNIL
						S17W25	5	0	0	EXPECTED 10 JANUARY 1983		S17W25	E	
						S13W22	1	0	0			S13W22	E	
						N09W12	1	0	0			N09W12	Q	
						S07W10	1	0	0			S07W10	Q	
						S09E07	3	0	0			S09W07E		
012	12	11	109	144	012	S16W39	3	0	0	PRESTO 12/0040Z MAGSTORM	12	S16W39	E	SOLQUIET
						S13W35	1	0	0	11/2309Z		S13W35	Q	MAGALERT 12
						S06W23	0	0	0			S06W23	Q	
						S08W07	1	0	0			S08W07	E	
						N15E25	0	0	0			N15E25	Q	
						S17E65	1	0	0			S17E25	Q	
013	13	12	150	140	015	S16W51	5	0	0		13	S16W51	E	SOLQUIET
						S11W50	1	0	0			S11W50	Q	MAGNIL
						N17W40	0	0	0			N17W40	Q	
						S05W38	1	0	0			S05W38	Q	
						S08W25	0	0	0			S08W25	Q	
						S09W17	0	0	0			S09W17	Q	
						N15E11	0	0	0			N15E11	Q	
						S16E51	2	0	0			S16E51	E	
						N10E68	3	0	0			N10E68	Q	
						N05E75	0	0	0			N05E75	Q	
014	14	13	154	140	008	S11W66	1	0	0		14	S11W66	E	SOLQUIET
						S17W63	0	0	0			S17W63	E	MAGQUIET
						S05W52	0	0	0			S05W52	Q	
						S08W31	0	0	0			S08W31	Q	
						N14W04	0	0	0			N14W04	Q	
						S17E39	0	0	0			S17E39	E	
						N06E44	2	0	0			N06E44	Q	
						N10E53	0	0	0			N10E53	E	
						N04E64	0	0	0			N04E64	Q	
						N09E72	0	0	0			N09E72	Q	
						S12E77	1	0	0			S12E77	Q	
015	15	14	145	142	007	S11W80	0	0	0		15	S11W80	E	SOLQUIET
						S16W75	0	0	0			S16W75	E	MAGQUIET
						S05W66	0	0	0			S05W66	Q	
						S08W43	0	0	0			S08W43	Q	
						N13W18	0	0	0			N13W18	Q	
						S17E25	0	0	0			S17E25	E	

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE
SUMMARY OF THE GEOALERT MESSAGES JANUARY 1983

NO	DI	DO	WOLF	10CM	A	LOC	TOT	M	X	OUTSTANDING EVENTS	DA	LOC	DE	ALERTS
						N06E28	0	0	0			N06E28	E	
						N10E39	0	0	0			N10E39	Q	
						N04E50	1	0	0			N04E50	E	
						N08E58	0	0	0			N08E58	E	
						S13E65	1	0	0			S13E65	E	
016	16	15	148	146	017	S05W80	0	0	0		16	S05W80	Q	SOLQUIET
						S08W56	1	0	0			S08W56	E	MAGQUIET
						N15W28	0	0	0			N15W28	Q	
						S17E12	2	0	0			S17E12	Q	
						N05E15	0	0	0			N05E15	E	
						S23E17	0	0	0			S23E17	Q	
						N04E38	0	0	0			N04E38	E	
						N08E46	2	0	0			N08E46	E	
						S13E52	2	0	0			S13E52	E	
						N16E69	0	0	0			N16E69	Q	
017	17	16	134	145	020	S09W71	0	0	0		17	S09W71	Q	SOLQUIET
						S17E00	0	0	0			S17E00	Q	MAGQUIET
						N05E02	0	0	0			N05E02	Q	
						N05E24	2	0	0			N05E24	Q	
						N08E32	5	0	0			N08E32	E	
						S13E38	0	0	0			S13E38	E	
						N16E56	0	0	0			N16E56	Q	
						S13E77	0	0	0			S13E77	Q	
018	18	17	155	143	020	S08W85	0	0	0		18	S08W85	Q	SOLQUIET
						S17W13	0	0	0			S17W13	Q	MAGALERT
						N05W12	0	0	0			N05W12	Q	MINOR 18
						N09E06	0	0	0			N09E06	Q	
						N05E10	1	0	0			N05E10	Q	
						N08E19	8	0	0			N08E19	E	
						S13E24	2	0	0			S13E24	E	
						N16E43	2	0	0			N16E43	Q	
						S12E62	0	0	0			S12E62	Q	
019	19	18	140	139	020	N04W27	0	0	0		19	N04W27	Q	SOLQUIET
						S18W26	0	0	0			S18W26	Q	MAGNIL
						N03W03	4	0	0			N03W03	Q	
						N08E06	0	0	0			N08E06	E	
						S14E11	0	0	0			S14E11	E	
						N16E29	1	0	0			N16E29	Q	
						S11E49	0	0	0			S11E49	Q	
020	20	19	135	132	014	N05W40	0	0	0		20	N05W40	Q	SOLQUIET
						S18W40	0	0	0			S18W40	Q	MAGQUIET
						N03W16	0	0	0			N03W16	Q	
						N09W08	2	0	0			N09W08	E	
						S12W02	1	0	0			S12W02	E	
						N16E16	0	0	0			N16E16	Q	
						S11E35	0	0	0			S11E16	Q	
021	21	20	119	125	015	S18W53	0	0	0		21	S18W53	Q	SOLQUIET
						N06W52	0	0	0			N06W52	Q	MAGQUIET
						N04W30	0	0	0			N04W30	Q	
						N08W21	0	0	0			N08W21	Q	
						S13W15	0	0	0			S13W15	Q	
						N16E03	0	0	0			N16E03	Q	
						S12E21	0	0	0			S12E21	Q	
022	22	21	082	120	012	S18W66	0	0	0		22	S18W66	Q	SOLQUIET
						N04W44	1	0	0			N04W44	Q	MAGQUIET
						N08W34	0	0	0			N08W34	Q	
						S13W28	0	0	0			S13W28	Q	
						N16W10	0	0	0			N16W10	Q	
						S12E09	0	0	0			S12E09	Q	
023	23	22	100	117	009	S18W80	0	0	0		23	S18W80	Q	SOLQUIET
						N04W58	1	0	0			N04W58	Q	MAGQUIET

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE
SUMMARY OF THE GEOALERT MESSAGES JANUARY 1983

NO	DI	DO	WOLF	10CM	A	LOC	TOT	M	X	OUTSTANDING EVENTS	DA	LOC	DE	ALERTS
						N09W47	0	0	0			N09W47	Q	
						S12W42	1	0	0			S12W42	Q	
						N17W25	0	0	0			N17W25	Q	
						S11W11	0	0	0			S11W11	Q	
						S11W05	0	0	0			S11W05	Q	
						S12E54	0	0	0			S12E54	Q	
024	24	23	080	119	007	N03W71	0	0	0		24	N03W71	Q	SOLQUIET
						N09W61	0	0	0			N09W61	Q	MAGQUIET
						S13W55	1	0	0			S13W55	Q	
						N17W39	0	0	0			N17W39	Q	
						S13E40	0	0	0			S13E40	Q	
						N08E84	0	0	0			N08E84	Q	
025	25	24	103	118	016	N03W84	1	0	0		25	N03W84	Q	SOLQUIET
						N09W75	1	0	0			N09W75	Q	MAGQUIET
						S13W69	1	0	0			S13W69	Q	
						N17W52	0	0	0			N17W69	Q	
						S14W27	0	0	0			S14W27	Q	
						S11E22	0	0	0			S11E22	Q	
						S07E47	1	0	0			S07E47	Q	
						N07E69	4	0	0			N07E69	Q	
026	26	25	120	127	014	N09W90	0	0	0		26	N09W90	Q	SOLQUIET
						S13W86	0	0	0			S13W86	Q	MAGQUIET
						N18W67	0	0	0			N18W67	Q	
						S12E07	0	0	0			S12E07	Q	
						S08E30	2	0	0			S08E30	Q	
						N04E33	3	0	0			N04E33	Q	
						N07E57	3	0	0			N07E33	Q	
						S18E75	1	0	0			S18E75	Q	
027	27	26	120	148	014	N18W79	0	0	0		27	N18W79	Q	SOLQUIET
						S11W08	0	0	0			S11W08	Q	MAGQUIET
						S07E16	1	0	0			S07E16	Q	STRATWARM
						N05E20	5	0	0			N05E20	Q	
						N06E43	0	0	0			N06E43	Q	
						S16E63	5	0	0			S16E63	Q	
						S13E77	0	0	0			S13E77	Q	
028	28	27	100	138	009	N24W32	0	0	0		28	N24W32	Q	SOLQUIET
						S08E02	0	0	0			S08E02	Q	MAGQUIET
						N05E06	5	0	0			N05E06	Q	STRATWARM
						N06E30	0	0	0			N06E30	Q	
						S15E52	0	0	0			S15E52	Q	
						S12E65	5	1	0			S12E65	E	
029	29	28	131	145	009	N24W47	0	0	0		29	N24W47	Q	SOLQUIET
						S12W32	0	0	0			S12W32	Q	MAGQUIET
						S08W12	4	0	0			S08W12	Q	STRATWARM
						N05W08	5	0	0			N05W08	E	
						N05E16	0	0	0			N05E16	Q	
						S16E38	0	0	0			S16E38	Q	
						S13E51	4	0	0			S13E51	E	
030	30	29	171	154	014	S11W45	1	0	0		30	S11W45	Q	SOLQUIET
						S09W26	1	0	0			S09W26	E	MAGQUIET
						N05W20	7	0	0			N05W20	E	
						N09W02	0	0	0			N09W02	Q	
						N05E03	0	0	0			N05E03	Q	
						S17E26	0	0	0			S17E26	Q	
						S14E39	4	0	0			S14E39	E	
						S18E50	1	0	0			S18E50	Q	
031	31	30	163	160	016	S11W59	0	0	0		31	S11W59	Q	SOLQUIET
						S08W38	0	0	0			S08W38	Q	MAGQUIET
						N05W33	1	0	0			N05W33	E	
						N05W10	0	0	0			N05W10	Q	
						S17E14	0	0	0			S17E14	Q	

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE
SUMMARY OF THE GEOALERT MESSAGES JANUARY 1983

NO	DI	DO	WOLF	10CM	A	LOC	TOT	M	X	OUTSTANDING EVENTS	DA	LOC	DE	ALERTS
						S13E26	1	0	0			S13E26	E	
						S18E36	1	0	0			S18E36	E	
032	01	31	182	162	017	S08W51	4	0	0		01	S08W51	Q	SOLQUIET
						N05W47	1	0	0			N05W47	E	MAGQUIET
						N05W24	1	0	0			N05W24	Q	STRATWARM
						S17W03	0	0	0			S17W03	Q	
						S14E11	3	0	0			S14E11	E	
						S18E23	11	0	0			S18E23	E	
						N21E54	0	0	0			N21E54	Q	
						S15E71	0	0	0			S15E71	Q	

NO=MESSAGE SERIAL NUMBER, DI=DATE OF ISSUE, DO=DATE OF OBSERVATION, WOLF=WOLF NUMBER, 10CM=10CM SOLAR FLUX, A=A INDEX, LOC=LOCATION LAT-LONG, TOT=TOTAL, M=NUMBER OF M FLARES, X=NUMBER OF X FLARES, DA= DATE OF FORECAST, DE=DESCRIPTION, Q=QUIET, E=ERUPTIVE, A= ACTIVE, P=PROTON.

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE
JANUARY 1983

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS)

10 JANUARY 1983 KAKIOKA 10/0630Z MAGSTORM 09/1545Z
10 JANUARY 1983 BOULDER 10/1445Z STRONG MAGSTORM IS SUBSIDING 10/1435Z A>=50 EXPECTED 10 JANUARY
12 JANUARY 1983 KAKIOKA 12/0043Z MAGSTORM 11/2309Z

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE
STRATWARM MESSAGES JANUARY 1983

26 JANUARY STRATWARM ALERT /THURSDAY/ STRATWARM EXISTS. STRONG INCREASE IN STRATOSPHERIC TEMPERATURE 25-60 KM OVER SIBERIA. ANTICYCLONE INTENSIFYING OVER ALEUTIAN REGION AT 10 MB.
27 JANUARY STRATWARM ALERT /FRIDAY/ STRATWARM EXISTS. FURTHER INCREASE IN WARMING OVER ALASKA TO SIBERIA SLOPING WESTWARD WITH THE HEIGHT 25-60 KM ALEUTIAN ANTICYCLONE ALSO INTENSIFYING AT 10 MB AT -8 DEGREES C.
28 JANUARY STRATWARM ALERT /SATURDAY/ STRATWARM EXISTS. CONTINUED WARMING OVER ALASKA TO SIBERIA 20-60 KM SPREADING NORTHWARD.
31 JANUARY STRATWARM ALERT /TUESDAY/ STRATWARM EXISTS. TEMPERATURE GRADIENT OVER POLAR REGION REVERSED ABOVE 30 KM. STRONG ALEUTIAN ANTICYCLONE SLOPING NW WITHHEIGHT TEMPERATURES MODERATE AT STRATOSPHERIC LEVELS. LARGEST CHANGE IN LAST THREE DAYS INVOLVES MOVEMENT OF COLD POLAR LOW FROM EURASIAN ARTIC TO OVER GREENLAND.

RELATIVE SUNSPOT NUMBERS

INTERNATIONAL, R_I

	1982 FINAL					PROVISIONAL					1983 PROVISIONAL
DAY	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
1	258	168	145	63	70	50	55	115	132	80	88	68
2	241	174	115	57	83	41	68	124	164	88	133	77
3	232	175	151	46	94	33	68	146	143	75	124	55
4	221	177	137	58	104	42	81	176	120	100	137	63
5	219	163	112	63	111	39	97	160	109	100	137	82
6	230	165	117	64	108	32	128	141	55	76	174	110
7	226	146	130	69	115	33	144	117	54	106	175	109
8	232	140	131	89	127	42	150	115	55	82	184	126
9	211	116	132	47	142	61	161	94	54	124	152	100
10	181	122	138	53	147	110	155	81	88	109	166	83
11	158	119	152	58	138	146	157	86	87	112	171	90
12	156	135	142	75	144	187	138	78	92	83	194	77
13	162	155	133	78	139	219	113	81	98	98	172	94
14	142	153	136	58	137	222	100	104	88	116	160	92
15	134	140	127	52	125	246	100	129	71	116	166	92
16	111	156	122	69	128	263	86	133	65	100	130	89
17	120	180	108	76	136	272	93	127	54	108	112	102
18	103	168	91	89	134	270	105	107	39	117	102	86
19	107	167	87	110	134	234	97	117	56	122	79	93
20	119	160	93	112	139	192	77	104	70	118	63	81
21	120	153	91	98	143	138	79	102	91	131	98	74
22	100	146	109	121	146	99	90	95	100	141	88	73
23	97	144	138	107	116	74	71	97	128	120	96	64
24	120	122	145	110	112	27	79	109	145	96	100	58
25	128	152	149	88	92	25	101	118	134	75	112	75
26	136	147	150	117	94	29	98	138	135	73	116	77
27	154	182	126	130	49	22	115	133	131	71	126	70
28	163	179	90	119	36	19	132	132	103	74	108	89
29		169	85	112	32	23	134	144	94	71	98	99
30		162	79	77	38	38	144	160	96	72	94	101
31		132		82		60	120		73		62	110
MEAN	163.6	153.8	122.0	82.2	110.4	106.1	107.6	118.8	94.3	98.5	126.4	85.8

1981 Yearly Mean = 140.4
Zurich R_Z sunspot number replaced by international R_I sunspot number beginning with January 1981 data.
Errata to SGD, 456 Part I, page 8, August issue: mean R_I should be 102.6 and not 026.

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

	1982											1983
DAY	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
1	284.8*	231.3	172.2*	151.7	134.2	106.5	123.4	184.3*	205.2	159.6	167.8	131.4
2	279.7*	228.3	172.0*	147.4	135.1	106.9	138.2*	168.7*	209.4	154.5	166.3	131.4
3	272.9*	230.1	169.9	147.7	141.5	109.4	153.5*	171.0*	197.0	147.4	181.6	136.2
4	252.8*	238.3*	158.2	144.7	158.2*	111.5	167.3	188.1*	182.3	143.4	194.5	138.2
5	245.2	245.4*	159.9*	148.7	156.6*	114.1	180.9	179.4	163.9	136.4	195.9*	154.6
6	245.2	230.0*	165.2	153.0	149.6*	121.3	201.2	172.1	151.9	142.1	210.4	161.6*
7	239.9	228.3	164.0*	151.0	158.6*	128.2*	219.6	176.8	140.2	142.3	244.3	163.3
8	245.1*	207.1*	162.1*	150.8	167.3	150.3*	217.5*	178.5	136.9	144.8	241.7*	155.9*
9	231.7	192.2	167.3*	139.8	177.4	176.6*	212.5	179.2	137.4	147.5	258.6	150.0
10	213.7	178.9*	177.1*	130.7	196.0*	203.5*	209.5	165.6	134.8	152.9	273.5*	144.2
11	211.1*	178.2	178.7*	132.3	224.2	226.4*	205.0*	158.3	137.3	154.1	259.3*	139.3
12	204.0*	181.2	177.5*	132.3	238.3*	239.7*	195.2*	152.5*	136.4	164.9	251.1	135.7
13	194.9*	185.5	170.9	129.8	240.2	252.6*	182.9*	151.3	143.9	161.2	239.0	135.1
14	185.3	201.3	157.9	132.2	240.8	269.2*	176.8	147.4	140.4	159.5	235.6	137.2
15	180.3	207.6*	152.2	132.1	235.8	274.0	173.0	149.0*	134.1	157.0*	221.9	141.0
16	170.5	227.7	148.2	139.0	210.6*	269.4*	161.4	147.3	129.8	163.3	213.2*	140.2
17	162.5	230.4	145.9*	142.2*	206.0*	273.3	165.1	147.0*	130.1	158.0	200.5*	138.0
18	165.7	226.8	147.0	146.8	200.7*	247.2*	166.4*	143.2	132.8	170.2*	186.5	134.8
19	170.9*	219.7*	145.1	155.9	207.5	234.7	159.2	142.6*	136.7	182.3	176.8*	127.4
20	171.3	217.0	144.2	155.6*	207.1	196.5	144.7	146.9	146.2	189.2	159.2	120.5
21	165.2	212.4	145.2	165.4*	210.7	173.7*	138.6	145.4	161.4	200.9	149.4	116.1
22	163.7	213.7	156.9*	158.8	197.2*	149.5*	138.8	146.2	168.2	231.1*	150.1*	113.5
23	173.1	202.4	175.2	155.7*	187.3	128.5	141.2	152.6*	177.3	196.1	157.0*	115.4
24	185.9*	189.0	181.0	144.8*	168.2	117.8	142.9	165.4*	190.9	172.9	166.8*	114.1
25	184.1	189.9	182.6*	145.7	159.1*	108.2	158.5	170.3	196.8	164.8	170.6	122.7
26	204.0	192.8*	178.3	158.0	142.3	102.1	166.4	187.3	193.5	168.8*	168.7	132.6
27	222.1	195.4*	167.3	171.5*	127.6	97.8	180.4	191.4	187.7	158.6	166.2	133.6
28	224.0	200.6	161.0*	171.3*	123.1	96.4	181.4	196.9	181.4	160.3*	157.0	140.6
29		198.0	155.6	170.9*	111.7	97.5	183.4	204.6	170.9	161.4	147.3	148.9
30		194.5*	149.8*	142.8	108.5	112.4	174.5	202.4	166.7	164.8	142.5	154.8
31		184.1		136.7		114.4	175.0*		165.1		134.4	161.9
MEAN	208.9	208.3	162.9	147.9	177.4	164.8	172.1	167.1	160.9	163.7	193.2	137.7

* adjusted for burst
A = interpolated data point

DAILY SOLAR INDICES

JANUARY 1983

DAY OF MONTH	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	PROVISIONAL SUNSPOT NUMBERS		OBSERVED FLUX	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_I	$R_{A'}$	OTTAWA 2800	AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	201	8	68	59	135.9	565	278	151	131.4	126	118	88	35	15
2	202	9	77	52	135.9	572	286	159	131.4	127	122	91	37	11
3	203	10	55	59	140.8	579	301	161	136.2	123	126	95	40	16
4	204	11	63	61	142.9	571	301	160	138.2	136	136	97	37	12
5	205	12	82	80	159.9	578	298	173	154.6	150	136	101	45	24
6	206	13	110	101	167.1*	419	284	172	161.6*	161	143	89	31	20
7	207	14	109	108	168.9				163.3					
8	208	15	126	105	161.2*	582	295	176	155.9*	152	163	101	38	19
9	209	16	100	91	155.1		308	170	150.0	131	137	102	38	
10	210	17	83	105	149.1				144.2					
11	211	18	90	75	144.1	540	268	158	139.3	136	133	96	32	15
12	212	19	77	75	140.3	582	281	160	135.7	127	140	81	35	11
13	213	20	94	86	139.7	574	300	162	135.1	130	126	83	34	15
14	214	21	92	94	141.9	591	296	164	137.2	140	128	82	37	13
15	215	22	92	86	145.8	565	293	167	141.0	145	132	79	33	12
16	216	23	89	96	144.8	557	269	143	140.2	152	110	75	37	12
17	217	24	102	99	142.6	583	266	145	138.0	143	111	83	32	12
18	218	25	86	93	139.3	571	274	145	134.8	137	111	95	39	12
19	219	26	93	87	131.6	573	268	134	127.4	121	104	100	39	13
20	220	27	81	78	124.5	582	272	135	120.5	119	107	100	40	13
21	221	1	74	66	119.9	584	269	142	116.1	112	109	86	33	14
22	222	2	73	62	117.1	575	257	141	113.5	112	103	71	37	20
23	223	3	64	53	119.1	502	258	142	115.4	112	104	73	33	19
24	224	4	58	53	117.7	541	270	139	114.1	112	97			
25	225	5	75	77	126.6	567	280	149	122.7	118	104			
26	226	6	77	62	136.8	580	290	159	132.6	132	113			
27	227	7	70	75	137.7	566	291	154	133.6	128	116			
28	228	8	89	86	144.9	558	281	153	140.6	134	120			
29	229	9	99	96	153.5	564	296	163	148.9	143	116			
30	230	10	101	103	159.6	573	287	173	154.8	138	129			
31	231	11	110	120	166.7	555	298	179	161.9	153	132			
MEAN			85.8	82.0	142.3	562	283	156	137.7	133	122	89	36	15

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

	SUNSPOT NUMBERS						2800 MHz FLUX Adjusted to 1 AU	
	Rz or R_I		Ra		Rs		Sa	
Date	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed
Feb 80	155.0	163	133.9	154	148.7	155	195.1	200
Mar	126.2	161	107.9	153	117.8	153	166.5	200
Apr	164.1	159	138.5	151	164.0	152	209.3	198
May	179.7	156	172.3	149	185.4	151	229.1	197
Jun	157.3	155	153.6	149	153.2	151	199.3	198
Jul	136.3	153	136.0	144	144.1	151	190.8	197
Aug	135.4	150	133.0	144	121.9	150	170.3	196
Sep	155.0	150	150.0	146	138.8	152	185.9	198
Oct	164.7	150	160.8	149	157.1	154	202.9	200
Nov	147.9	148	149.9	149	168.5	153	213.4	199
Dec	174.4	143	167.5	145	174.3	150	218.8	196
Jan 81	114.0	140	115.4	144	120.5	149	169.0	195
Feb	141.3	142	143.7	146	153.5	152	199.5	198
Mar	135.5	143	149.2	149	157.5	156	203.2	202
Apr	156.4	143	169.2	149	180.7	158	224.7	204
May	127.5	143	141.3	149	152.8	159	198.9	204
Jun	90.9	142	99.0	147	112.9	158	161.9	203
Jul	143.8	140	154.3	146	152.1	157	198.2	203
Aug	158.7	141	170.4	147	182.1	158	226.0	203
Sep	167.3	143	174.5	148	177.7	158	221.9	204
Oct	162.4	142	157.0	146	178.6	156	222.8	202
Nov	137.5	139	138.8	142	157.6	151	203.3	197
Dec	150.1	138	145.0	140	155.5	149	201.4	195
Jan 82	111.2	137	110.4	139	124.2	148	173.4	195
Feb	163.6	133	161.0	134	163.6	144	208.9	191
Mar	153.8	129	155.5	130	163.0	139	208.3	186
Apr	122.0	124*	121.9	124	113.9	134	162.9	182
May	82.2	119*	82.6	120	97.7	129	147.9	177
Jun	110.4	117*	113.5	118	129.6	127	177.4	175
Jul	106.1	115*	113.3	113	116.0	125	164.8	174
Aug	107.6	109(± 4)*	110.5	107	123.9	118	172.1	---
Sep	118.8	103(± 6)*	117.8	101	118.5	111	167.1	---
Oct	94.3†	96(± 6)*	90.1	95	111.8	103	160.9	---
Nov	98.5†	92(± 7)*	93.2	90	114.8	98	163.7	---
Dec	126.4†	88(± 9)*	145.0	86	146.7	94	193.2	---
Jan 83	85.8†	83(±10)*	---	82	86.7	89	137.7	---
Feb	---	80(±11)*	---	79	---	86	---	---
Mar	---	79(±12)*	---	77	---	84	---	---
Apr	---	77(±13)*	---	75	---	82	---	---
May	---	74(±15)*	---	73	---	78	---	---
Jun	---	71(±17)*	---	70	---	75	---	---
Jul	---	69(±19)*	---	68	---	74	---	---

*An asterisk denotes either a value of the observed 12-month running mean or a predicted 12-month average that is based on preliminary observations of the international relative sunspot number (R_I). Parentheses enclose the 90% confidence limits. Shaded boxes enclose the most recent smoothed values; boxes not shaded enclose predicted values. Ra is the new symbol for R_A'. All tabulated entries of Ra are final values.

†RI replaces Rz as of January 1981.

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS FOR CYCLE 21

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1976	15	13	12	13	13	12	13	14	14	13	14	15
1977	17	18	20	22	24	26	29	33	39	46	52	57
1978	61	65	70	77	83	89	97	104	108	111	113	118
1979	124	131	137	141	147	153	155	155	156	158	162	165*
1980	164	163	161	159	156	155	153	150	150	150	148	143
1981	140	142	143	143	143	142	140	141	143	142	139	138
1982	137	133	129	124	119	117	115	109 (4)	103 (6)	96 (6)	92 (7)	88 (9)
1983	83 (10)	80 (11)	79 (12)	77 (13)	74 (15)	71 (17)	69 (19)	68 (21)	67 (22)	67 (23)	68 (24)	67 (24)
1984	65 (25)	62 (25)	58 (26)	54 (27)	52 (28)	51 (29)	50 (30)	48 (30)	46 (30)	44 (29)	42 (28)	40 (27)
1985	38 (27)	38 (26)	37 (26)	37 (25)	36 (25)	33 (24)	32 (23)	31 (22)	31 (22)	30 (23)	29 (23)	28 (24)
1986	28 (24)	27 (24)	25 (24)	24 (23)	22 (22)	20 (22)	18 (21)	16 (20)	16 (18)	16 (17)	15 (16)	15 (14)
1987	15 (12)	15 (12)	16 (12)	17 (13)	18 (14)	19 (14)	21 (15)					

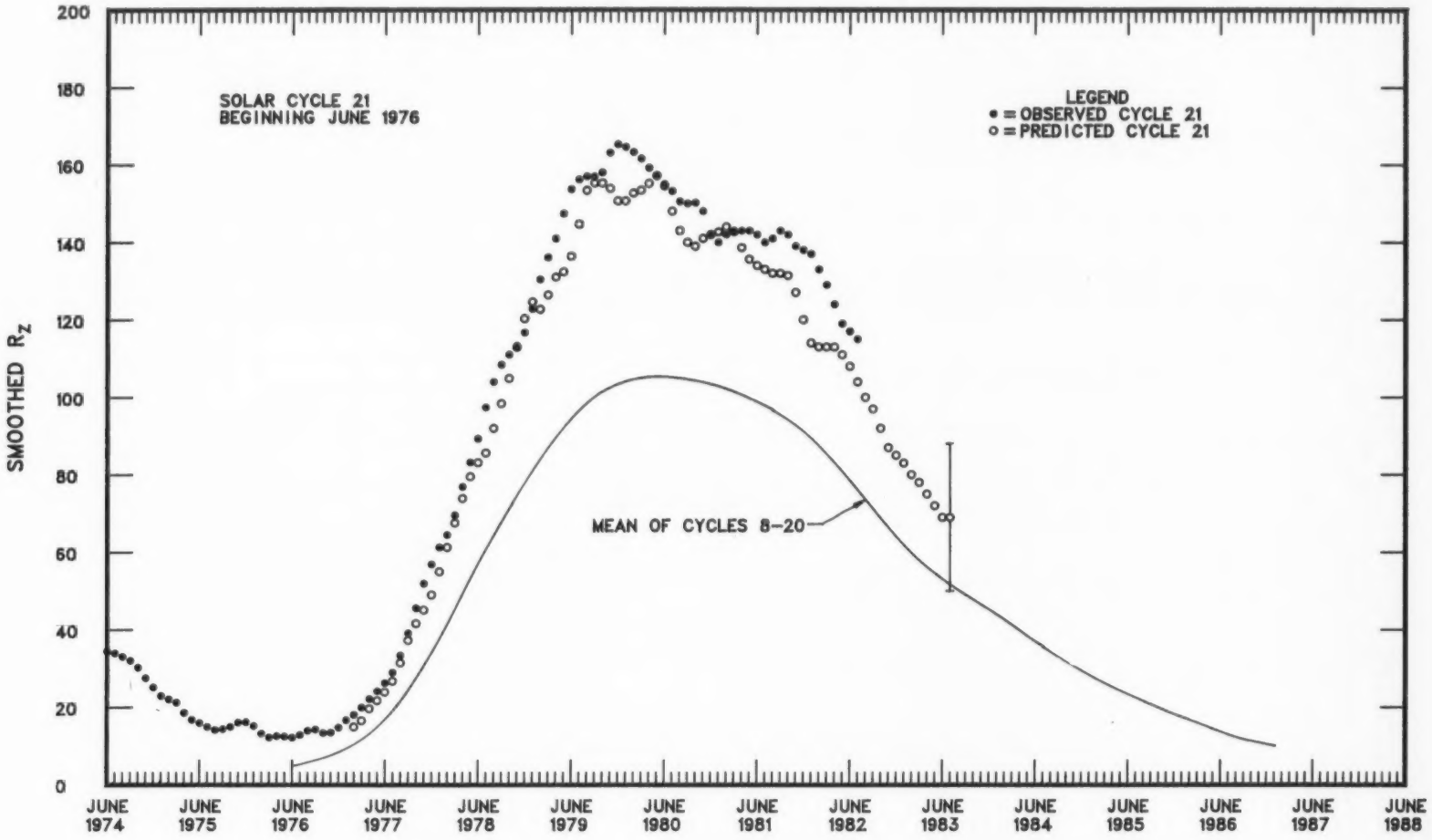
For the current solar cycle, this table gives observed smoothed sunspot numbers up to the one calculated from the most recently measured monthly mean. These smoothed observed values are based on final monthly mean Zurich numbers through 1980, on final international numbers through September 1982, and on provisional monthly mean international numbers thereafter. Some table entries after the June 1976 number will change slightly, when we incorporate final data for 1982.

The entries with numbers in parentheses below them denote predictions by the McNish-Lincoln method. (See page 10 in the February 1982 edition of the "Solar-Geophysical Data" supplement.) By adding to and subtracting from each prediction the number in parentheses, one generates the 90% confidence interval. Consider, for example, the July 1983 prediction tabulated above. There exists a 90% chance that in July 1983 the actual smoothed sunspot number will fall somewhere between 50 and 88.

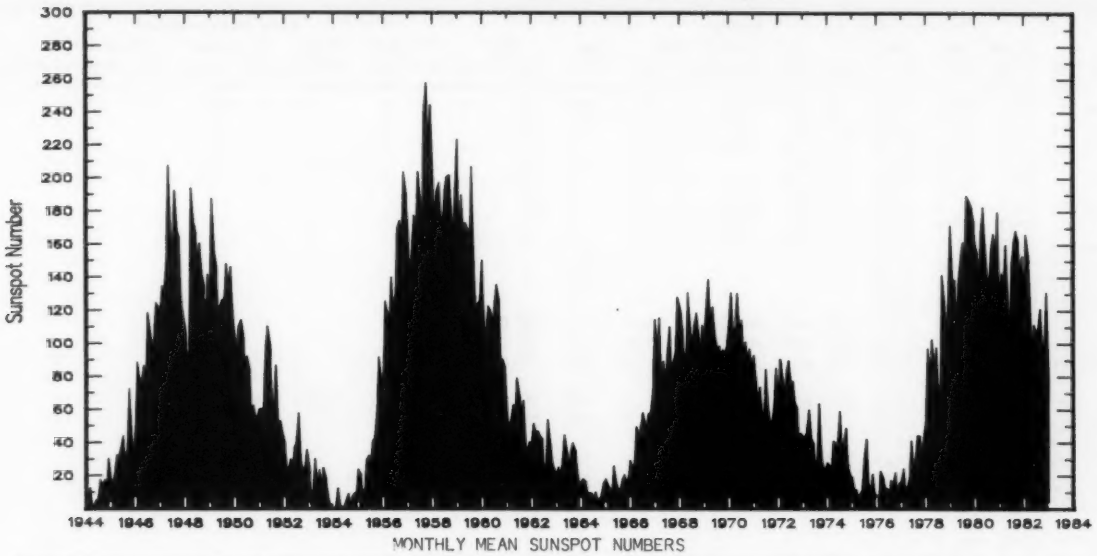
THE MCNISH-LINCOLN PREDICTION METHOD GENERATES MEANINGFUL ESTIMATES OF SMOOTHED SUNSPOT NUMBERS FOR NO MORE THAN 12 MONTHS AHEAD. Beyond a year the predictions regress rapidly toward the mean of all 13 cycles of data used in the computation. Furthermore, the method is very sensitive to the date defined as the beginning of the current sunspot cycle, that is, to the date of the most recent sunspot minimum. In "Solar-Geophysical Data," Issues 390-401, we based the current cycle predictions on March 1976 as the end of cycle 20 and the onset of the new cycle 21. Later studies, including one published by M. Waldmeier, showed that June 1976 was more appropriately the minimum epoch. We therefore generated this table using the June 1976 date.

*MAXIMUM OF SUNSPOT CYCLE 21. The maximum smoothed sunspot number occurred in December 1979.

OBSERVED AND ONE-YEAR-AHEAD PREDICTED SMOOTHED SUNSPOT NUMBERS



MONTHLY MEAN SUNSPOT NUMBERS
(January 1944 – January 1983)



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1944	3.7	0.5	11.0	0.3	2.5	5.0	5.0	16.7	14.3	16.9	10.8	28.4
1945	18.5	12.7	21.5	32.0	30.6	36.2	42.6	25.9	34.9	68.8	46.0	27.4
1946	47.6	86.2	76.6	75.7	84.9	73.5	116.2	107.2	94.4	102.3	123.8	121.7
1947	115.7	133.4	129.8	149.8	201.3	163.9	157.9	188.8	169.4	163.6	128.0	116.5
1948	108.5	86.1	94.8	189.7	174.0	167.8	142.2	157.9	143.3	136.3	95.8	138.0
1949	119.1	182.3	157.5	147.0	106.2	121.7	125.8	123.8	145.3	131.6	143.5	117.6
1950	101.6	94.8	109.7	113.4	106.2	83.6	91.0	85.2	51.3	61.4	54.8	54.1
1951	59.9	59.9	55.9	92.9	108.5	100.6	61.5	61.0	83.1	51.6	52.4	45.8
1952	40.7	22.7	22.0	29.1	23.4	36.4	39.3	54.9	28.2	23.8	22.1	34.3
1953	26.5	3.9	10.0	27.8	12.5	21.8	8.6	23.5	19.3	8.2	1.6	2.5
1954	0.2	0.5	10.9	1.8	0.8	0.2	4.8	8.4	1.5	7.0	9.2	7.6
1955	23.1	20.8	4.9	11.3	28.9	31.7	26.7	40.7	42.7	58.5	89.2	76.9
1956	73.6	124.0	118.4	110.7	136.6	116.6	129.1	169.6	173.2	155.3	201.3	192.1
1957	165.0	130.2	157.4	175.2	164.6	200.7	187.2	158.0	235.8	253.8	210.9	239.4
1958	202.5	164.9	190.7	196.0	175.3	171.5	191.4	200.2	201.2	181.5	152.3	187.6
1959	217.4	143.1	185.7	163.3	172.0	168.7	149.6	199.6	145.2	111.4	124.0	125.0
1960	146.3	106.0	102.2	122.0	119.6	110.2	121.7	134.1	127.2	82.8	89.6	85.6
1961	57.9	46.1	53.0	61.4	51.0	77.4	70.2	55.9	63.6	37.7	32.6	40.0
1962	38.7	50.3	45.6	46.4	43.7	42.0	21.8	21.8	51.3	39.5	26.9	23.2
1963	19.8	24.4	17.1	29.3	43.0	35.9	19.6	33.2	38.8	35.3	23.4	14.9
1964	15.3	17.7	16.5	8.6	9.5	9.1	3.1	9.3	4.7	6.1	7.4	15.1
1965	17.5	14.2	11.7	6.8	24.1	15.9	11.9	8.9	16.8	20.1	15.8	17.0
1966	28.2	24.4	25.3	48.7	45.3	47.7	56.7	51.2	50.2	57.2	57.2	70.4
1967	110.9	93.6	111.8	69.5	86.5	67.3	91.5	107.2	76.8	88.2	94.3	126.4
1968	121.8	111.9	92.2	81.2	127.2	110.3	96.1	109.3	117.2	107.7	86.0	109.8
1969	104.4	120.5	135.8	106.8	120.0	106.0	96.8	98.0	91.3	95.7	93.5	97.9
1970	111.5	127.8	102.9	109.5	127.5	106.8	112.5	93.0	99.5	86.6	95.2	83.5
1971	91.3	79.0	60.7	71.8	57.5	49.8	81.0	61.4	50.2	51.7	63.2	82.2
1972	61.5	88.4	80.1	63.2	80.5	88.0	76.5	76.8	64.0	61.3	41.6	45.3
1973	43.4	42.9	46.0	57.7	42.4	39.5	23.1	25.6	59.3	30.7	23.9	23.3
1974	27.6	26.0	21.3	40.3	39.5	36.0	55.8	33.6	40.2	47.1	25.0	20.5
1975	18.9	11.5	11.5	5.1	9.0	11.4	28.2	39.7	13.9	9.1	19.4	7.8
1976	8.1	4.3	21.9	18.8	12.4	12.2	1.9	16.4	13.5	20.6	5.2	15.3
1977	16.4	23.1	8.7	12.9	18.6	38.5	21.4	30.1	44.0	43.8	29.1	43.2
1978	51.9	93.6	76.5	99.7	82.7	95.1	70.4	58.1	138.2	125.1	97.9	122.7
1979	166.6	137.5	138.0	101.5	134.4	149.5	159.4	142.2	188.4	186.2	183.3	176.3
1980	159.6	155.0	126.2	164.1	179.9	157.3	136.3	135.4	155.0	164.7	147.9	174.4
1981	114.0	141.3	135.5	156.4	127.5	90.9	143.8	158.7	167.3	162.4	137.5	150.1*
1982	111.2	163.6	153.8	122.0	82.2	110.4	106.1	107.6	118.8	94.3*	98.5*	126.4*
1983	85.8*											

*Provisional

H - ALPHA SOLAR FLARES

JANUARY 1983

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp	Opt	Xray	Sec	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
LEAR	01	0041	0044	0124	S14	W49	4033	12	28.3	43	1N	C	7.3	3	C		250		
LEAR	01	0212	0213	0226	S11	W63	4033	12	27.3	14	SF	C	1.3	3	C		37		F
LEAR	01	0335	0337	0343	S17	W58	4033	12	27.7	8	SF	C	1.2	3	C		65		
PEKG	01	0420	0425	0430	S19	W30		12	29.9	10	SF				C	0425	42	.5	E
LEAR	01	0421	0423	0430	S20	W29	4039	12	30.0	9	SF	C	1.0	3	C		32		
LEAR	01	0422	0422	0426	S14	W62	4033	12	27.5	4	SF			3	C		16		
LEAR	01	0703	0704	0709	S14	W65	4033	12	27.4	6	SF			3	C		29		
LEAR	01	0942	0949	1006	S12	W55	4033	12	28.3	24	1B	C	8.7	3	C		188		FH
GOES	01	1350	1406	1410						20		C	.8						
GOES	01	1526	1534	1538						12		C	1.1						
GOES	01	1729	1733	1738						9		C	.8						
HOLL	01	2254	2259	2327	S14	W58	4033	12	28.6	33	1B	C	5.9	3	C		187		FH
PALE	01	2255	2257	2258D	S16	W58	4033	12	28.6	3D	1F	C	5.9	3	C		127		
LEAR	01	2300E	2300U	2322	S16	W59	4033	12	28.5	22D	1F	C	5.9	2	C		154		F
PEKG	02	0200E	0201	0216	S11	W79		12	27.1	16D	1N	M	1.1		C	0201	97		E
LEAR	02	0202E	0202U	0221	S12	W78	4033	12	27.2	19D	SN	M	1.1	3	C				F
GOES	02	1426	1431	1436						10		C	1.0						
RAMY	02	1511	1524	1547	S18	W49	4039	12	29.9	36	SF	C	1.0	3	C		74		
RAMY	02	1629	1636	1654	S15	E48	4047	01	6.3	25	SF			3	C		41		
GOES	02	2346	2346	2348						2		C	2.0						
GOES	03	0309	0313	0318						9		C	.9						
LEAR	03	0437	0443	0454	S08	E79		01	9.1	17	SF			3	C				
ISTA	03	0850		0859	S18	W52		12	30.4	9	SF								E
LEAR	03	0852	0852	0904	S15	W60	4039	12	29.8	12	SF	C	.7	3	C		17		
ISTA	03	0857		0915	S19	E40		01	6.4	18	SN	C	.8						E
LEAR	03	0901	0905	0920	S17	E38	4047	01	6.3	19	SF	C	.8	3	C		34		
GOES	03	1335	1348	1355						20		C	1.1						
GOES	03	1633	1636	1638						5		C	.8						
HOLL	03	1729	1734	1756	S07	E66	4049	01	8.7	27	SF	C	.8	3	C		26		
RAMY	04	1227	1242	1250	S14	E64	4048	01	9.4	23	SF			3	C		37		
GOES	04	1349	1357	1407						18		C	1.0						
GOES	04	2043	2049	2052						9		C	2.1						
HOLL	04	2338	2342	2346	S17	E56	4048	01	9.2	8	SF			3	C		49		
GOES	05	0053	0059	0107						14		C	1.1						
GOES	05	0256	0259	0301						5		C	2.2						
LEAR	05	0329	0339	0417	S13	E57	4048	01	9.4	48	SN	C	3.3	3	C		35		F
LEAR	05	0459	0525	0528D	N15	E64		01	10.1	29D	1F			2	C		113		F
GOES	05	0545	0552	0559						14		C	1.5						
GOES	05	0749	0753	0800						11		C	1.3						
GOES	05	0848	0851	0855						7		C	1.1						
GOES	05	0935	0943	0951						16		C	2.1						
GOES	05	1324	1328	1332						8		C	1.2						
RAMY	05	1724E	1726U	1728	S17	W15	4046	01	4.6	4D	SF			3	C		37		F
PALE	06	0034	0034U	0100	S14	E45	4048	01	9.4	26	SF	C	1.0	3	C		20		
PALE	06	0109	0113	0121	S12	E43	4048	01	9.3	12	SF			3	C		31		
GOES	06	0503	0548	0548			4048			45		C	1.4						
LEAR	06	0504	0504	0517	S12	E42	4048	01	9.4	13	SF			3	C		50		
GOES	06	0732	0735	0815			4051			43		C	1.8						
LEAR	06	0801	0814	0822	S11	E70	4053	01	11.6	21	SF			3	C		54		
LEAR	06	0808	0815	0830	S15	W24	4046	01	4.5	22	SF			3	C		29		F
GOES	06	1148	1154	1200						12		C	1.4						
GOES	06	1227	1239	1242						15		C	1.3						
RAMY	06	1501	1509	1535	S10	E33	4048	01	9.1	34	SN	C	1.3	3	C		47		
RAMY	06	1659	1701	1759	S12	E31	4048	01	9.0	60	SN			3	C		20		
GOES	06	1720	1730	1738						18		C	1.3						
GOES	06	2013	2021	2032						19		C	1.0						
HOLL	06	2143E	2318U	2319	S12	E32	4048	01	9.3	96D	SF			3	C		53		
PALE	06	2243E	2259U	2319D	S17	W30	4046	01	4.7	36D	SF			3	C		43		
LEAR	07	0010	0027	0034	S14	W31	4046	01	4.7	24	SF			3	C		55		
LEAR	07	0206	0206	0227	N10	E43	4051	01	10.3	21	SB	C	2.9	3	C		144		F
GOES	07	0206	0206	0227			4051			21		C	2.9						
YUNN	07	0207E	0207U	0216	N09	E44		01	10.4	9D	1N	C	2.9		P	0207	252	3.7	F
LEAR	07	0458	0501	0550	S17	W35	4046	01	4.5	52	SF	C	2.0	3	C		55		F
LEAR	07	0508	0511	0521	N13	E36	4051	01	9.9	13	SF			3	C		90		F
PEKG	07	0510	0518	0535	S17	W36		01	4.5	25	SF				P	0518	109	1.4	F

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
YUNN	07	0526E	0526U	0535D	S16	W36		01	4.5	9D	SN			P	0526	157	2.0	
GOES	07	0800	1006	1133						213		C 4.9						
RAMY	07	1208	1234	1259	S11	E21	4048	01	9.1	51	SF		3	C		46		
RAMY	07	1334	1407	1428	N07	W58	4041	01	3.2	54	SF		3	C		34		F
PALE	07	2249E	2251U	2311D	S09	E12	4048	01	8.9	22D	SF		3	C		49		F
LEAR	08	0232	0234	0239	S08	E45	4053	01	11.5	7	SF		3	C		34		
LEAR	08	0244	0245	0251	S08	E45	4053	01	11.5	7	SF		3	C		34		
LEAR	08	0254	0301	0313	S09	E44	4053	01	11.4	19	SF	C 1.4	3	C		25		FH
LEAR	08	0422	0423	0431	S09	E43	4053	01	11.4	9	SF	C 1.3	3	C		48		H
GOES	08	0823	0830	0840						17		C 1.3						
GOES	08	1042	1046	1100						18		C 1.2						
GOES	08	1128	1134	1140						12		C 2.4						
RAMY	08	1329	1330	1402	S10	E41	4053	01	11.6	33	SB	C 4.3	3	C		161		F
RAMY	08	1341	1345	1453	S09	E07	4048	01	9.1	72	SB	C 4.9	3	C		188		F
RAMY	08	1438	1440	1513	S19	W51	4046	01	4.7	35	SN		3	C		39		F
HOLL	08	1552	1614	1647	S12	E40	4053	01	11.7	55	SN		3	C		129		F
GOES	08	1608	1613	1618						10		C 2.7						
GOES	08	1659	1702	1704						5		C 1.9						
HOLL	08	1802	1804	1813	S10	E36	4053	01	11.5	11	SF		3	C		33		F
HOLL	08	1823	1825	1831	S09	E07	4048	01	9.3	8	SF		3	C		26		
HOLL	08	1828	1838	1930	S16	W56	4046	01	4.5	62	SN		3	C		19		
PALE	08	1845E	1855U	1931	S10	E37	4053	01	11.6	46D	SN	C 1.7	3	C		42		F
PALE	08	1845E	1901U	1938	S18	W57	4046	01	4.4	53D	SN		3	C		71		
HOLL	08	1854	1855	1929	S11	E38	4053	01	11.6	35	SN	C 1.7	3	C		63		F
HOLL	08	2105	2111	2206D	S11	E34	4053	01	11.4	61D	SF		3	C		36		F
HOLL	08	2215	2218	2251	S09	E25	4053	01	10.8	36	SN		3	C		54		F
PALE	08	2220	2230	2232	S17	W59	4046	01	4.4	12	SF		3	C		24		
HOLL	08	2319	2345		S15	W61	4046	01	4.3	D	SF		3	C		27		
PALE	08	2341	2344	0004	S17	W60	4046	01	4.4	23	SF		3	C		25		
PALE	08	2348	0005	0028	S08	E25	4053	01	10.9	40	SF		3	C		32		
HOLL	08	2349	2350	0003D	S09	E23	4053	01	10.7	14D	SF		3	C		23		
PALE	09	0046	0050	0112	S17	W56	4046	01	4.8	26	SB		3	C		35		
LEAR	09	0047	0050	0111	S16	W55	4046	01	4.9	24	SB		3	C		19		
PALE	09	0118	0135	0138	S18	W58	4046	01	4.6	20	SN		3	C		39		F
PALE	09	0144	0146	0152	S17	W57	4046	01	4.7	8	SN		3	C		24		
PALE	09	0213	0217	0247	S09	E30	4053	01	11.3	34	SB	C 3.1	3	C		156		F
PEKG	09	0215	0216	0234	S10	E31		01	11.4	19	1N	C 3.1		C	0216	210	2.5	F
LEAR	09	0215	0218	0254	S09	E31	4053	01	11.4	39	1N	C 3.1	3	C		229		F
LEAR	09	0224	0224	0228	S18	W57	4046	01	4.8	4	SF		3	C		16		
PALE	09	0235	0235	0238	S18	W59	4046	01	4.6	3	SF		3	C		17		F
LEAR	09	0335	0336	0353	S09	E00	4048	01	9.1	18	SF		3	C		32		F
WEND	09	1005	1009	1026	S09	E27		01	11.4	21	SF			C	1009	69	.8	
WEND	09	1137	1159	1240	S09	E26		01	11.4	63	SN			C	1159	94	1.1	
GOES	09	1150	1204	1211						21		C 1.5						
HOLL	09	1646	1651	1715	S16	W09	4054	01	9.0	29	SF	C 1.0	3	C		31		F
HOLL	09	1734E	1737	1748	S16	W10	4054	01	9.0	14D	SN		3	C		71		F
HOLL	09	1820	1837	1920	S16	W69	4046	01	4.5	60	SB	C 2.5	3	C		88		
PALE	09	1834E	1850	1933	S16	W11	4054	01	8.9	59D	SF		3	C		119		ZF
PALE	09	1836E	1837	1855	S18	W68	4046	01	4.6	19D	SB	C 2.5	3	C		56		F
LEAR	10	0058	0101	0116	S15	W13	4054	01	9.1	18	SF		3	C		51		F
LEAR	10	0306	0315U	0334	S16	W13	4054	01	9.1	28	SF	C 1.1	3	C		43		F
LEAR	10	0510	0513	0519	S17	W14	4054	01	9.2	9	SF		3	C		32		F
YUNN	10	0655E	0657	0700	S15	W18		01	8.9	5D	SN			P		94	1.0	E
GOES	10	0807	0812	0818						11		C 1.1						
YUNN	10	0809	0811	0819	S16	W17		01	9.0	10	SF			C		79	.9	
YUNN	10	0921	0922	0926	N13	W07		01	9.9	5	SN			C		79	.9	EG
LEAR	10	0921	0922	0925	N13	W06	4051	01	9.9	4	SF		3	C		39		F
GOES	10	1035	1043	1050						15		C 1.1						
GOES	10	1122	1125	1128						6		C 1.8						
RAMY	10	1352	1352	1403	S11	W18	4048	01	9.2	11	SF	C 1.0	3	C		25		F
GOES	10	1401	1404	1409						8		C 1.9						
GOES	10	1456	1502	1506						10		C 1.0						
RAMY	10	1528	1530	1534	S18	W88	4046	01	3.9	6	SF		3	C				
GOES	10	1626	1646	1710			4054			44		C 1.1						
GOES	10	2258	2258	2305						7		C 1.2						
PALE	11	0226	0227	0236	S10	E04	4053	01	11.4	10	SF		3	C		65		
LEAR	11	0227	0228	0234	S10	E04	4053	01	11.4	7	SF		3	C		40		F

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YUNN	11	0228E	0228U	0230D	S09	E04		01	11.4	2D	SN			P	0228	31	.3	
LEAR	11	0516	0516	0521	S16	E78	4058	01	17.1	5	SF		3	C				
GOES	11	0711	0727	0731						20		C 1.0						
GOES	11	1053	1100	1113						20		C .9						
GOES	11	1243	1248	1256						13		C 1.1						
RAMY	11	1441	1445	1451	S16	W31	4054	01	9.3	10	SF		3	C		32		
GOES	11	1725	1731	1738						13		C 1.0						
HOLL	11	1805	1807	1813	S13	W36	4048	01	9.0	8	SF		3	C		31		F
HOLL	11	1826	1829	1853	S13	W36	4048	01	9.0	27	SF		3	C		28		K
HOLL	11	1826	1843	1853	S13	W36	4048	01	9.0	27	SN	C 1.0	3	C		58		K
RAMY	11	1832	1848	1930D	S17	W37	4054	01	9.0	58D	SF	C 1.0	3	C		48		
PALE	11	1839	1844	1849	S16	W33	4054	01	9.3	10	SF	C 1.0	3	C		38		
PALE	11	2039	2047	2059	S15	W37	4054	01	9.1	20	SF		3	C		50		
LEAR	11	2339	2344	2358	N16	W22	4056	01	10.3	19	SF		3	C		36		
LEAR	12	0208	0210	0235	S14	W41	4054	01	9.0	27	SF		3	C		40		F
LEAR	12	0633	0633	0642	S17	E63	4058	01	17.1	9	SF		3	C		23		F
LEAR	12	0655	0655	0706	S16	W41	4054	01	9.2	11	SF		3	C		24		F
YUNN	12	0907	0908	0911	S15	E64		01	17.2	4	SN			C		47	1.1	D
WEND	12	1032	1050	1122	S09	W11		01	11.6	50	SB			C	1050	63	.7	E
RAMY	12	1247	1320	1325	S14	W43	4054	01	9.3	38	SF		3	C		26		
WEND	12	1515	1517	1519D	S16	W45		01	9.2	4D	SN			C	1517	38	.6	E
RAMY	12	1758	1758	1813	S17	W44	4054	01	9.4	15	SF	C .8	3	C		75		F
HOLL	12	1758	1759	1813	S16	W44	4054	01	9.4	15	SF	C .8	3	C		57		F
HOLL	12	1906	1912	1951	N09	E72		01	18.2	45	SN	C 3.2	4	C				
GOES	12	2004	2010	2015						11		C 1.2						
HOLL	12	2117	2120	2131	N09	E71		01	18.2	14	SF	C 5.3	3	C		25		
HOLL	12	2131E	2131U	2145	N09	E90		01	19.7	14D	SN		3	C				
HOLL	12	2250	2256	2344	S06	W33	4052	01	10.5	54	SF		3	C		91		F
HOLL	12	2319	2322	2341	S18	E53	4058	01	17.0	22	SF		3	C		17		
LEAR	12	2335	2336	2357	S11	W50	4048	01	9.2	22	SF		3	C		34		
HOLL	12	2337	2338	2348	S09	W50	4048	01	9.2	11	SF		3	C		32		
LEAR	13	0151	0154	0200D	S11	W51	4048	01	9.2	9D	SF		3	C		23		
HOLL	13	1549	1606	1630	N04	E48		01	17.2	41	SF		3	C		25		F
HOLL	13	1807	1827	1957	S16	W16		01	12.5	110	2N	C 3.9	3	C		529		UY
RAMY	13	1811	1832	1938	S16	W16		01	12.5	87	1N	C 3.9	3	C		360		F
HOLL	13	1922	1924	1931	N04	E46	4063	01	17.2	9	SF		3	C		22		
HOLL	13	2226	2226	2237	S15	E79	4065	01	19.9	11	SF		3	C				
LEAR	14	0550	0550	0554	N03	E65	4060	01	19.1	4	SF		3	C		15		
HOLL	14	1642	1648	1652	N08	E61	4064	01	19.3	10	SF		3	C		11		
PALE	14	1856E	1857U	1902	S11	E69	4065	01	20.0	6D	SF		3	C		18		
LEAR	15	0046	0052	0105	S12	W55	4061	01	10.9	19	SN	C 1.4	3	C		32		
LEAR	15	0054	0055	0058	S10	W45	4053	01	11.7	4	SF		3	C		68		F
YUNN	15	0205	0208	0217	S13	E66		01	20.1	12	SN			C		47		E
LEAR	15	0334	0334	0350	S13	E65	4065	01	20.1	16	SF		3	C		20		F
LEAR	15	0531	0533	0537	S12	E63	4065	01	20.0	6	SN		3	C		19		
RAMY	15	1336	1341	1351	S18	E21	4058	01	17.2	15	SN	C .9	3	C		90		F
GOES	15	1511	1526	1534						23		C 1.5						
RAMY	15	1626	1631	1645	N10	E48	4064	01	19.3	19	SF		3	C		37		
RAMY	15	1632	1638	1704D	S17	E19	4058	01	17.1	32D	SF		3	C		93		
GOES	15	1728	1739	1742						14		C .9						
LEAR	15	2239E	2240U	2309	N09	E44	4064	01	19.2	30D	SF		2	C		23		F
PALE	15	2254E	2258U	2304	N12	E42	4064	01	19.1	10D	SF		3	C		66		F
YUNN	16	0111	0112	0116	N16	E69		01	21.3	5	SN			C		16		D
PALE	16	0212	0217	0248	S12	W75	4061	01	10.4	36	SF		3	C		35		
YUNN	16	0214E	0214	0224	S12	W77		01	10.3	10D	SN			P		16		DG
LEAR	16	0215	0216	0226	S12	W76	4061	01	10.4	11	SF		3	C				
LEAR	16	0259	0259	0309	S12	W76	4061	01	10.4	10	SF		3	C				
PALE	16	0300	0303	0311	S13	W74	4061	01	10.5	11	SF		3	C				
PALE	16	0304	0308	0313	S08	W79	4052	01	10.2	9	SF		3	C				
GOES	16	0352	0415	0444						52		C 1.4						
YUNN	16	0510	0514	0525	N06	E36		01	18.9	15	SN			C		63	.8	D
LEAR	16	0510	0514	0533	N04	E35	4060	01	18.8	23	SN		3	C		43		F
GOES	16	0601	0620	0631						30		C 3.1						
GOES	16	0840	0848	0853						13		C 1.2						
GOES	16	1234	1242	1251						17		C 1.5						
GOES	16	1619	1625	1632						13		C 1.3						

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GOES	16	1645	1653	1702						17		C	1.1						
GOES	16	1744	1751	1756						12		C	1.1						
HOLL	16	1941	1941	1946	N09	E35	4064	01	19.4	5	SF			3	C		26		F
GOES	16	1952	1957	2002						10		C	1.1						
HOLL	16	2100	2100	2121	N06	E26	4060	01	18.8	21	SN			3	C		20		F
PALE	16	2103	2103	2114	N07	E26	4060	01	18.8	11	SF			3	C		37		
PALE	16	2110	2111	2113	N11	E33	4064	01	19.4	3	SF			3	C		31		
LEAR	16	2255	2259	2344	N09	E34	4064	01	19.5	49	SB	C	3.0	3	C		68		F K
LEAR	16	2255	2323	2344	N09	E34	4064	01	19.5	49	SF			3	C		24		K
HOLL	16	2256	2258	2318	N09	E32	4064	01	19.4	22	SB	C	3.0	3	C		52		F
PALE	16	2257	2258	2307	N10	E32	4064	01	19.4	10	SB	C	3.0	3	C		42		FE
HOLL	16	2323	2323	2345D	N09	E32	4064	01	19.4	22D	SN	C	4.0	3	C		19		
HOLL	16	2348	2348	0011D	N10	E31	4064	01	19.3	23D	SF	C	4.0	3	C		28		F
LEAR	16	2349	0006	0026	N10	E32	4064	01	19.4	37	SF	C	4.0	3	C		32		F
LEAR	17	0037	0039	0043	N10	E32	4064	01	19.4	6	SF			3	C		25		
LEAR	17	0119	0119	0125	N10	E32	4064	01	19.5	6	SF			3	C		20		
YUNN	17	0211	0216	0229	S12	E38		01	20.0	18	SN				P		31	.4	E
LEAR	17	0216	0220	0232	S13	E36	4065	01	19.8	16	SF			3	C		45		F
PALE	17	0219	0220	0224	S13	E36	4065	01	19.8	5	SF			3	C		42		
LEAR	17	0258	0259	0312	N09	E31	4064	01	19.5	14	SF			3	C		25		K
LEAR	17	0258	0306	0312	N09	E31	4064	01	19.5	14	SN	C	1.9	3	C		63		F K
PALE	17	0258	0306	0314	N08	E33	4064	01	19.6	16	SN	C	1.9	3	C		63		
PALE	17	0329	0331	0338	N10	E28	4064	01	19.3	9	SF			3	C		20		
YUNN	17	0330E	0331	0336D	S12	E38		01	20.0	6D	SN				P		48	.6	E
LEAR	17	0345	0345	0417	N09	E31	4064	01	19.5	32	SN	C	1.1	3	C		29		F K
LEAR	17	0345	0402	0417	N09	E31	4064	01	19.5	32	SN	C	1.0	3	C		39		K
LEAR	17	0423	0425	0436	N10	E30	4064	01	19.4	13	SN			3	C		47		
LEAR	17	0550	0550	0555	N09	E29	4064	01	19.4	5	SF			3	C		34		
LEAR	17	0558	0558	0618	N10	E29	4064	01	19.4	20	SF			3	C		33		
YUNN	17	0559E	0600	0604	N12	E29		01	19.4	5D	SN				P		113	1.4	
YUNN	17	0606	0607	0610	N11	E29		01	19.4	4	SN				C		129	1.6	
YUNN	17	0622	0623	0629	N07	E21		01	18.8	7	1N				C		193	2.2	
YUNN	17	0622	0623	0629	S15	E34		01	19.8	7	SN				C		32	.4	
YUNN	17	0654	0655	0658	S13	E36		01	20.0	4	SN				C		48	.6	E
YUNN	17	0706	0707	0719	S13	E37		01	20.1	13	SN				C		48	.6	
GOES	17	1133	1142	1204						31		C	1.4						
PALE	17	1801E	1816U	1840	N17	E47	4067	01	21.3	39D	SF			3	C		153		
PALE	17	1814	1816	1826	S12	E28	4065	01	19.9	12	SF			3	C		23		F
PALE	17	1919	1921	1934	N16	E45	4067	01	21.2	15	SF			3	C		23		
PALE	18	0312	0312	0320	N07	E08	4060	01	18.7	8	SF			3	C		21		
LEAR	18	0343	0343	0450	N05	E09	4060	01	18.8	67	SN	C	.9	3	C		45		K
LEAR	18	0343	0413	0450	N05	E09	4060	01	18.8	67	SF	C	.9	3	C		52		K
LEAR	18	0505	0505	0512	N06	E08	4060	01	18.8	7	SF			3	C		28		
GOES	18	1307	1311	1315						8		C	.7						
GOES	18	1339	1411	1510						91		C	1.1						
RAMY	18	1511	1534	1544	N16	E35	4067	01	21.3	33	SF			3	C		76		
GOES	19	0021	0024	0027						6		C	.7						
LEAR	19	0054	0055	0105	N08	E03	4064	01	19.3	11	SF			3	C		41		
LEAR	19	0625	0625	0629	S16	E09	4065	01	20.0	4	SF			3	C		51		F
GOES	19	0826	0843	0902						36		C	2.3						
LEAR	19	0854	0857	0900	N10	W01	4064	01	19.3	6	SF			3	C		24		
GOES	20	1638	1845	1917						159		C	.5						
GOES	20	1843	1846	1850						7		C	.5						
LEAR	21	0638	0639	0652	N05	W32	4060	01	18.9	14	SF	C	1.8	3	C		72		F
LEAR	21	0638	0639	0729	N06	W35	4062	01	18.7	51	SN	C	1.8	3	C		98		FH
PEKG	21	0640	0642	0705	N07	W38		01	18.4	25	SF	C	1.8		P	0642	105	1.4	F
WEND	22	1358	1408	1414	S16	W41		01	19.5	16	SF				C	1408	75	1.1	
PALE	22	2222E	2321U	0022D	N06	W60	4060	01	18.4	120D	SF	C	2.1	3	C		19		F
HOLL	22	2345	2350	2358	S14	W46	4065	01	19.5	13	SF			3	C		37		
LEAR	23	0219	0242	0311	S09	W02	4068	01	22.9	52	SF	C	1.4	3	C		124		FH
PEKG	23	0220E	0222	0300	S10	W04		01	22.8	40D	SF	C	1.4		C	0222	189	2.0	F
GOES	23	0534	0543	0552						18		C	1.1						
LEAR	23	0552	0552	0604	N05	E73		01	28.7	12	SF			3	C				H
WEND	23	0917	0922	0934	N08	W71		01	18.1	17	SF				C	0922	38		G

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
WEND	23	1111	1115	1136	N14	W57		01	19.2	25	SF			C	1115	38	.7	G
WEND	23	1124	1128	1132	N18	W41		01	20.4	8	SF			C	1128	25	.4	G
GOES	23	1221	1233	1256						35		C .8						
LEAR	24	0123E	0123U	0125	S13	W60	4065	01	19.5	2D	SF		3	C		61		
PEKG	24	0220E	0220	0220D	N22	E75		01	29.9	2D	SF			P	0220	17		D
GOES	24	0555	0558	0608						13		C .7						
LEAR	24	0737	0738	0744	N06	E76	4071	01	30.0	7	SF	C 1.1	3	C				
GOES	24	0807	0811	0817						10		C .8						
WEND	24	0910		0939	N12	E80		01	30.4	29	SF			C	0922	19		
WEND	24	0914	0916	0924	N07	E75		01	30.0	10	SF	C 3.0		C	0916	25		
YUNN	24	0915E	0917	0920	N07	E77		01	30.2	5D	1N	C 3.0		C		64		D
LEAR	24	0916	0919	0923	N07	E73	4071	01	29.9	7	SF	C 3.0	3	C				
GOES	24	0947	0958	1007			4071			20		C 3.1						
WEND	24	0958	1001	1016	N07	E77		01	30.2	18	SF	C 3.1		C	1001	44		
LEAR	24	1001	1001	1005	N10	E75	4071	01	30.1	4	SF	C 3.1	3	C				
WEND	24	1056	1103	1122	N07	E76		01	30.2	26	SF			C	1003	25		
GOES	24	1158	1159	1204						6		C .7						
HOLL	24	1611	1611	1619	N06	W79	4060	01	18.8	8	SF	C .6	3	C				
HOLL	24	1744	1803	1824D	N10	W69	4064	01	19.6	40D	SF	C 1.2	3	C		34		
HOLL	24	1802	1805	1807	S09	E48		01	28.4	5	SF		3	C		44		
GOES	24	1954	1959	2006						12		C 1.1						
GOES	24	2120	2128	2133						13		C 2.0						
GOES	24	2303	2306	2310						7		C .6						
PALE	25	0021E		0021	S06	E29	4072	01	27.2	7D	SF		3	C		21		F
LEAR	25	0256	0303	0308	N07	E66	4071	01	30.1	12	SF		3	C		14		
LEAR	25	0459	0501	0505	N07	E63	4071	01	29.9	6	SF	C 1.0	3	C		14		
GOES	25	0642	0649	0659						17		C 1.5						
GOES	25	0808	0810	0813						5		C .8						
LEAR	25	0820	0822	0834	N07	E61	4071	01	29.9	14	SF		3	C		28		
LEAR	25	0932	0934	0956D	N04	E41		01	28.5	24D	SF		3	C		18		
GOES	25	0956	1000	1004						8		C 1.2						
GOES	25	1015	1017	1020						5		C 1.1						
GOES	25	1232	1239	1243						11		C .7						
RAMY	25	1319	1323	1346	N05	E40		01	28.5	27	SF		3	C		50		
RAMY	25	1515	1516	1528	S16	E87		02	1.2	13	SF		3	C				
HOLL	25	1645E	1645U	1718	N02	E37		01	28.5	33D	SF	C .9	3	C		131		
GOES	25	1925	1947	1952						27		C 1.1						
PALE	25	2221	2221	2232	S08	E30	4072	01	28.2	11	SF		3	C		19		
LEAR	26	0112	0116	0120	N06	E34	4073	01	28.6	8	SF		3	C		20		
PALE	26	0213	0230	0232D	N04	E32	4073	01	28.5	19D	SF	C 1.2	3	C		41		F
LEAR	26	0219	0220	0224	N05	E33	4073	01	28.6	5	SF		3	C		22		F
PALE	26	0319	0321	0328	S07	E27	4072	01	28.2	9	SF		3	C		39		F
LEAR	26	0336	0336	0341	S08	E27	4072	01	28.2	5	SF		3	C		25		F
LEAR	26	0527	0528	0532	S17	E77	4074	02	1.1	5	SF	C 1.0	3	C				F
LEAR	26	0619	0620	0627	N06	E30	4073	01	28.5	8	SF		3	C		33		F
GOES	26	0805	0825	0829						24		C 1.3						
GOES	26	0950	1002	1008						18		C 1.0						
RAMY	26	1355	1356	1411	N05	E28	4073	01	28.7	16	SN		3	C		29		F
HOLL	26	1605	1616	1626	N03	E27	4073	01	28.7	21	SF		3	C		40		F
HOLL	26	1626	1626	1633	S17	E72	4074	02	1.2	7	SF		3	C		25		
HOLL	26	1637	1637	1654	S18	E70	4074	02	1.0	17	SF		3	C		25		
HOLL	26	1739	1741	1804	S18	E70	4074	02	1.1	25	SF	C 1.0	3	C		34		
GOES	26	1754	1804	1811						17		C 1.2						
HOLL	26	1920	1922	1930	S19	E72	4074	02	1.3	10	SF		3	C		11		
GOES	26	1959	2004	2011						12		C 1.0						
GOES	26	2112	2116	2123						11		C 1.2						
HOLL	26	2125E	2129	2140	N03	E12	4073	01	27.8	15D	SF		2	C		40		H
GOES	26	2219	2223	2227						8		C 1.3						
LEAR	27	0237	0243	0256	S16	E75	4075	02	1.8	19	SF	C 2.5	3	C				F
PALE	27	0241	0246	0255	S12	E79	4075	02	2.1	14	SF	C 2.5	3	C				
YUNN	27	0300	0302	0305	N08	E20		01	28.6	5	SN			C		161	1.8	D
PEKG	27	0301E	0302	0304	N07	E19		01	28.5	3D	SF			P	0302	84	.9	D
LEAR	27	0301	0303	0307	N06	E19	4073	01	28.5	6	SF		3	C		62		
PALE	27	0301	0302	0307	N07	E18	4073	01	28.5	6	SF		3	C		36		F
PALE	27	0310	0325	0328D	S12	E78	4075	02	2.0	18D	SF		3	C				
PALE	27	0311	0326	0328D	N07	E18	4073	01	28.5	17D	SF		3	C		31		F
LEAR	27	0330	0338	0357	S15	E73	4075	02	1.7	27	1N	M 1.2	3	C				F

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
PEKG	27	0334E	0336	0348	S16	E72		02	1.6	14D	SN	M 1.2		P	0336	71		DK
PEKG	27	0334E	0341	0348	S15	E72		02	1.6	14D	SN	M 1.2		P	0341	59		E
LEAR	27	0535	0536	0541	N05	E20	4073	01	28.7	6	SF		2	C		80		F
GOES	27	0638	0641	0643						5		C 2.0						
GOES	27	0747	0752	0806						19		C 2.2						
LEAR	27	0829	0829	0842	S14	E74	4075	02	2.0	13	SF		3	C		11		
GOES	27	1119	1124	1129						10		C 1.0						
GOES	27	1148	1152	1155						7		C 1.0						
GOES	27	1235	1239	1243						8		C 1.0						
GOES	27	1830	1834	1842						12		C 1.4						
GOES	27	1917	1925	1929						12		C .9						
PALE	27	2124	2132	2155	S14	E64	4075	02	1.7	31	SN	C .9	3	C		104		
PALE	27	2127	2129	2132	N03	E12	4073	01	28.8	5	SF		2	C		33		
HOLL	27	2131	2140	2144	S17	E61	4075	02	1.5	13	SF		2	C		22		
HOLL	27	2158	2158	2201	N06	E06	4073	01	28.4	3	SF		3	C		32		F
LEAR	28	0041	0043	0047	N06	E05	4073	01	28.4	6	SF	C .8	3	C		41		F
YUNN	28	0042	0046	0048	N07	E05		01	28.4	6	SN	C .8		P		80	.9	E
PALE	28	0215	0225	0233	S17	E67	4075	02	2.2	18	SF		2	C		43		F
LEAR	28	0305	0305	0310	N07	E04	4073	01	28.4	5	SF		3	C		23		
YUNN	28	0604	0608	0620	N03	E01		01	28.3	16	SN			P		113	1.2	E
LEAR	28	0606	0607	0634	N02	E02	4073	01	28.4	28	SF		3	C		39		
YUNN	28	0750	0752	0800	S08	W08		01	27.7	10	SN	C .8		C		113	1.2	
LEAR	28	0750	0751	0805	S09	W08	4072	01	27.7	15	SF	C .9	3	C		51		
GOES	28	1119	1124	1129						10		C 1.0						
RAMY	28	1435	1436	1445	S09	W04	4072	01	28.3	10	SN	C .9	3	C		103		
HOLL	28	1638	1640	1650	N06	W02	4073	01	28.5	12	SF		3	C		67		
HOLL	28	1727	1729	1737	S16	E59	4075	02	2.2	10	SF		3	C		15		
RAMY	28	1834	1836	1844	N07	W04	4073	01	28.5	10	SN		3	C		50		
HOLL	28	1834	1835	1910	N06	W04	4073	01	28.5	36	SF		3	C		63		F
HOLL	28	2101	2106	2143	S09	W12	4072	01	28.0	42	SF		3	C		78		
HOLL	28	2224	2227	2240	S17	E55	4075	02	2.1	16	SF	C .8	3	C		61		F
HOLL	28	2308	2309	2314	S12	W11	4072	01	28.1	6	SN	C 1.3	3	C		130		F
LEAR	28	2309E	2309U	2317	S12	W12	4072	01	28.1	8D	SF	C 1.3	3	C		95		F
GOES	29	0354	0356	0359			4075			5		C .8						
LEAR	29	0401	0402	0418	S15	E50	4075	02	2.0	17	SF		3	C		45		
GOES	29	0503	0507	0511			4075			8		C 1.8						
YUNN	29	0509E	0512	0516	S15	E44		02	1.5	7D	1N	C 1.8		P		161	2.3	
LEAR	29	0509E	0513U	0537	S15	E44	4075	02	1.5	28D	SN	C 1.8	3	C		52		F
LEAR	29	0531	0532	0544	N04	W12	4073	01	28.3	13	SF		3	C		33		
YUNN	29	0641	0645	0653	N05	W13		01	28.3	12	SN			C		113	1.2	
LEAR	29	0643	0644	0654	N03	W12	4073	01	28.4	11	SF		3	C		43		F
GOES	29	0716	0721	0726						10		C .8						
GOES	29	0816	0830	0838						22		C .9						
LEAR	29	0906	0910	0935	N03	W12	4073	01	28.5	29	SF		3	C		59		F
GOES	29	1056	1103	1107						11		C 1.0						
RAMY	29	1510	1510	1541	S15	E48	4075	02	2.3	31	SF	C .9	3	C		43		
HOLL	29	1540	1543	1608	N06	W15	4073	01	28.5	28	SF		3	C		37		
HOLL	29	1629	1630	1640	S10	W42	4070	01	26.5	11	SF		3	C		28		F
RAMY	29	1639	1647	1703	N04	W17	4073	01	28.4	24	SN	C 2.3	3	C		183		F
HOLL	29	1639	1647	1659	N05	W17	4073	01	28.4	20	SN	C 2.3	3	C		201		F
RAMY	29	1745	1757	1813	S19	E57		02	3.1	28	SF		3	C		15		
HOLL	29	1757	1805	1814	S07	W23	4072	01	28.0	17	SF		3	C		37		
GOES	29	1840	1843	1848						8		C 1.1						
GOES	29	1931	1935	1939			4075			8		C 3.7						
HOLL	29	1937E	1937U	1958D	N07	W17	4073	01	28.5	21D	SF		3	C		54		
HOLL	29	1937E	1937U	1958D	S15	E37	4075	02	1.6	21D	SN		3	C		98		F
LEAR	29	2354	0003	0010	N03	W22	4073	01	28.4	16	SF	C 1.0	3	C		26		
GOES	30	0105	0108	0113						8		C 1.0						
GOES	30	0343	0350	0358						15		C 1.0						
YUNN	30	0500	0502	0516	N04	W25		01	28.3	16	SN	C 1.0		C		64	.7	
LEAR	30	0502	0502	0514	N03	W23	4073	01	28.5	12	SF	C 1.0	3	C		26		
LEAR	30	0622	0622	0632	S20	E46	4077	02	2.8	10	SF		3	C		19		
GOES	30	1337	1341	1347						10		C 1.0						
GOES	30	1831	1836	1849						18		C .9						
PALE	30	2301	2303	2314	S11	E80		02	6.0	13	SF	C 1.9	3	C				
PALE	30	2355	2355	0004	S16	E23	4075	02	1.7	9	SF		3	C		32		
PALE	31	0019	0019	0024	S18	E36	4077	02	2.8	5	SF		3	C		24		

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
LEAR	31	0106	0106	0120	S19	E36	4077	02	2.8	14	SF	C .9	2	C		29		F
PALE	31	0106	0106	0119	S18	E35	4077	02	2.7	13	SF	C .9	3	C		27		
LEAR	31	0146	0154	0207	S19	E36	4077	02	2.8	21	SF		2	C		42		F
PALE	31	0152	0155	0207	S17	E35	4077	02	2.7	15	SF		3	C		28		F
LEAR	31	0157	0157	0200	N06	W12	4071	01	30.2	3	SF		2	C		30		
PALE	31	0157	0158	0200	N07	W12	4071	01	30.2	3	SF		3	C		43		FH
LEAR	31	0350	0352	0356	S18	E35	4077	02	2.8	6	SF		3	C		35		
LEAR	31	0411	0417	0427	S18	E34	4077	02	2.8	16	SF	C 1.0	3	C		42		F
LEAR	31	0417	0418	0425	S14	E21	4075	02	1.8	8	SF		3	C		26		
LEAR	31	0448	0457	0536	S09	W42	4072	01	28.0	48	SF		3	C		71		
LEAR	31	0455	0456	0501	S16	E32	4077	02	2.6	6	SF	C .9	3	C		26		
RAMY	31	1144E	1145U	1150	S08	W43	4072	01	28.3	6D	SN	C 2.1	3	C		89		
RAMY	31	1248	1259	1308	N05	W41	4073	01	28.5	20	SF		3	C		26		
PALE	31	1822	1828	1846	S18	E26	4077	02	2.7	24	SF		3	C		47		
PALE	31	1853	1903	1941	S16	E23	4077	02	2.5	48	SF	C 1.9	3	C		82		
PALE	31	1946	1949	1955	S10	W52	4072	01	27.9	9	SF		3	C		18		
RAMY	31	2031	2037	2042	S18	E25	4077	02	2.8	11	SN		3	C		58		
GOES	31	2156	2158	2204			4077			8		C 1.0						
PALE	31	2200	2203	2212	S15	E26	4077	02	2.9	12	SF	C 1.0	3	C		159		
PALE	31	2228	2230	2242	S15	E26	4077	02	2.9	14	SF		3	C		60		
PALE	31	2316	2320	2326	S13	E16	4075	02	2.2	10	SF		3	C		39		

"Remarks":

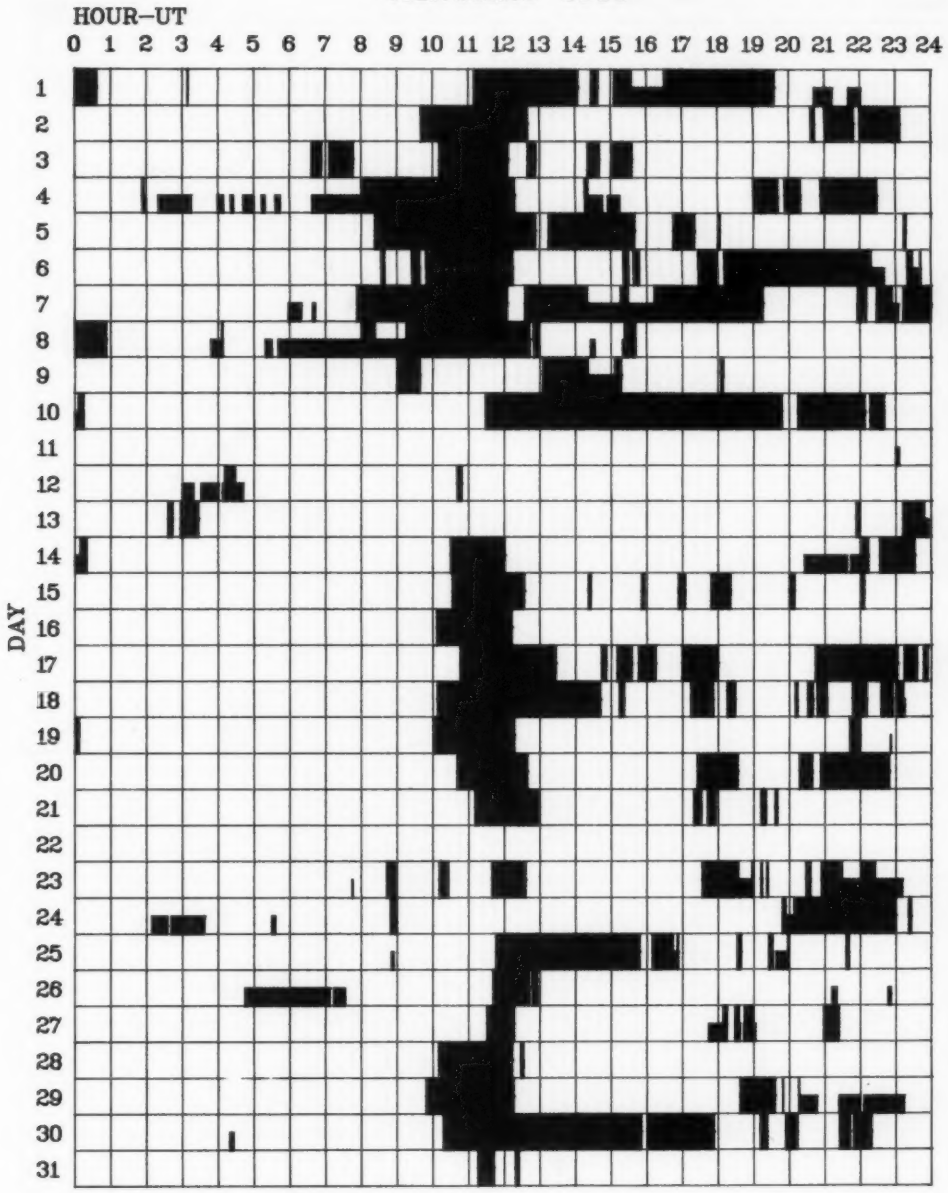
A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by high-speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the H and K lines of CaII.
P = Flare shows helium D3 in emission.
Q = Flare shows Balmer continuum in emission.
R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.
S = Brightness follows disappearance of filament in same position.
T = Region active all day.
U = Two bright branches, parallel or converging.
V = Occurrence of an explosive phase: important, expansion within roughly 1 minute that often includes a significant intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide H-alpha line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

The 4-digit number appearing under "Remarks" denotes the calcium plage region number assigned by the Space Environment Services Center in Boulder, Colorado.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

JANUARY 1983



Observatories included in total patrol:

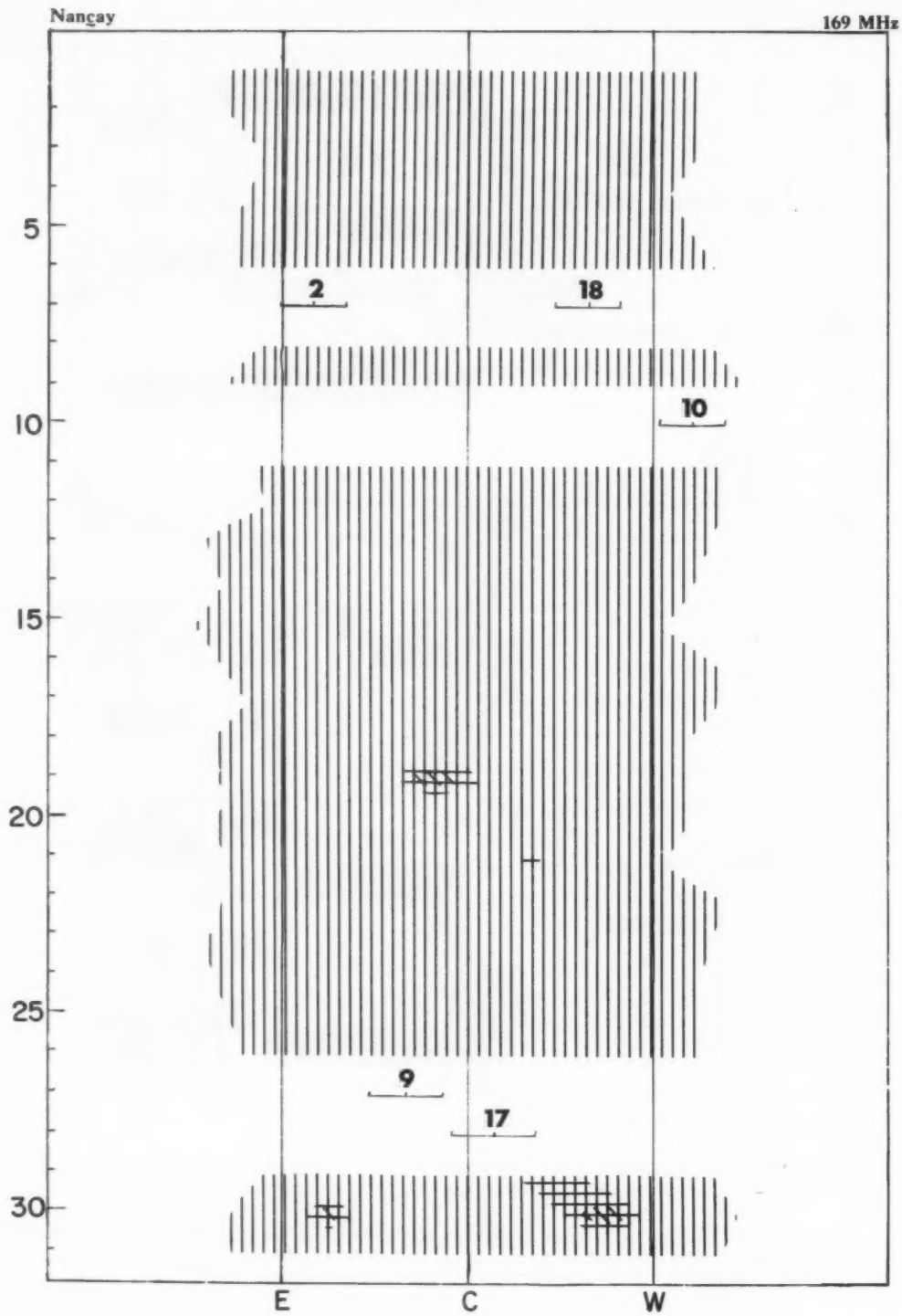
Bucharest	Istanbul	Monte Mario	Peking	Wendelstein
Holloman	Learmonth	Palehua	Ramey	

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

24
Jan 83

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

JANUARY 1983

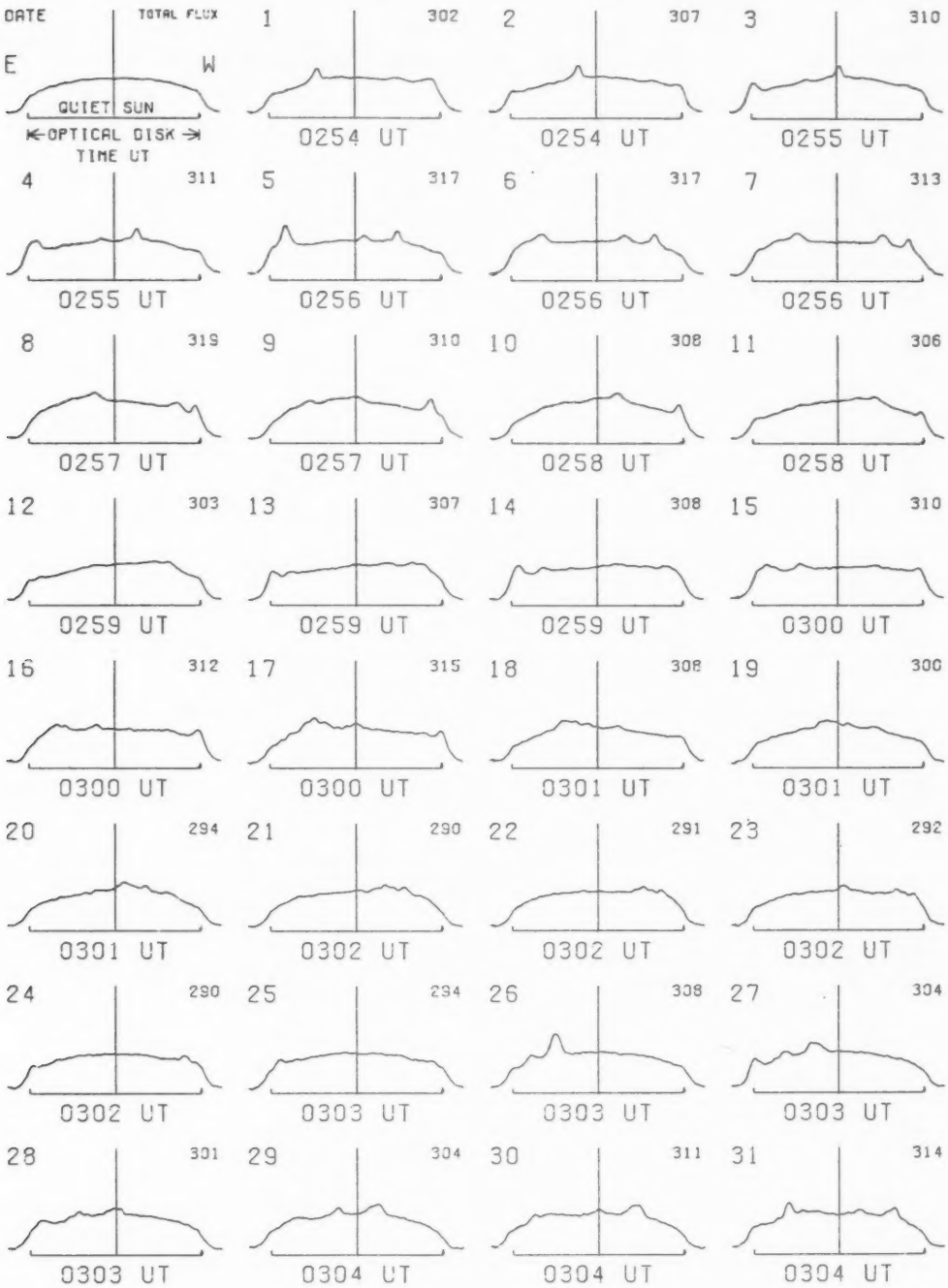


EAST-WEST SOLAR SCANS

JANUARY 1983

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC

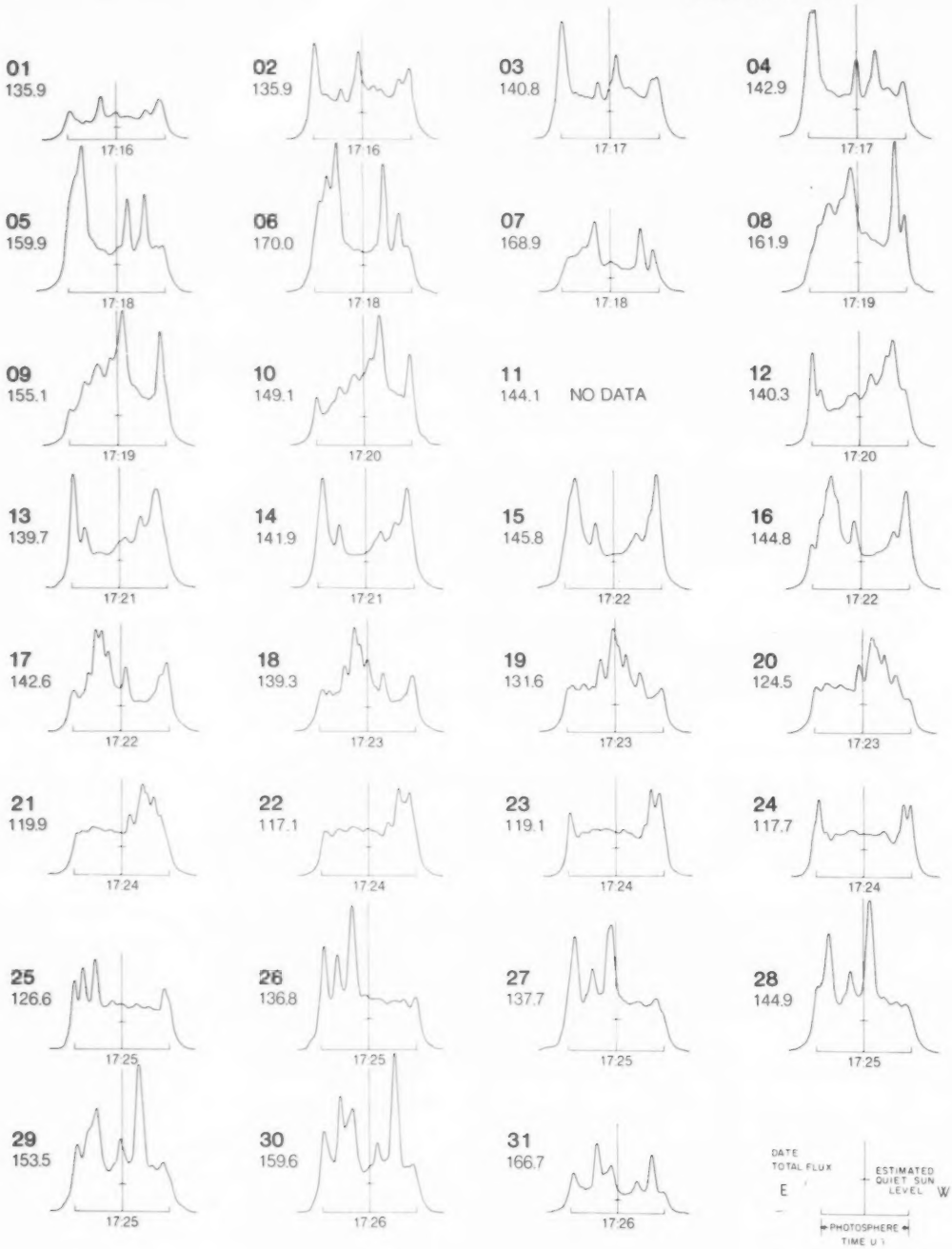


EAST-WEST SOLAR SCANS

JANUARY 1983

ALGONQUIN RADIO OBSERVATORY
CANADA

10·7 cm
Fan Beam with 1·5 minutes of arc
E-W Resolution

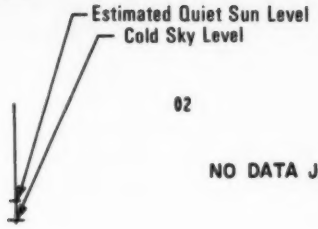


EAST-WEST SOLAR SCANS

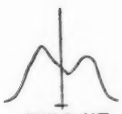
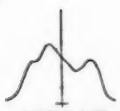
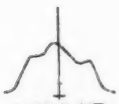
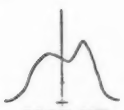
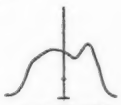
JANUARY 1983

Fleurs, Australia

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution



NO DATA JANUARY 1-16, 20, 25-31, 1983

01	02	03	04	05
E W				
06	07	08	09	10
E W				
11	12	13	14	15
E W				
16	17	18	19	20
E W	 0206 UT	 0206 UT	 0206 UT	
21	22	23	24	25
E W	0207 UT	 0207 UT	 0207 UT	0202 UT
26	27	28	29	30
E W				
31				

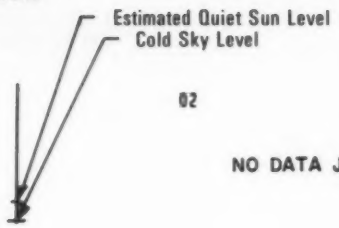
28
Jan 83

EAST-WEST SOLAR SOLAR SCANS

Fleurs, Australia

JANUARY 1983

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



01 02 03 04 05

NO DATA JANUARY 1-16, 20, 21, 25-31, 1983

E W

06 07 08 09 10

E W

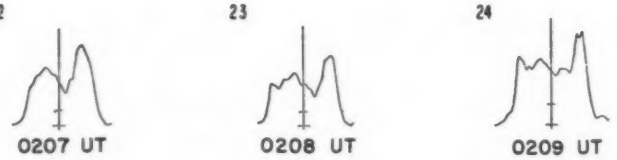
11 12 13 14 15

E W

16 17 18 19 20

E W

21 22 23 24 25



E W

26 27 28 29 30

E W

31

E W

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JANUARY 1983

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
01	2695	LEAR	4	S/F	0041.8	0042.5	3.3	39.0			QL=6 ST=2 TYP=3
	8800	LEAR	47	GB	0041.8	0043.1	3.5	72.0			QL=6 ST=2 TYP=5
	8800	PALE	47	GB	0042.1	0043.1	3.2	72.0			QL=6 ST=2 TYP=5
	2695	ATHN	4	S/F	0942.3	0945.0	3.5	33.0			QL=2 ST=2 TYP=3
	2800	OTTA	1	S	1853.0	1854.5	7.0	2.4	0.9		
	2695	LEAR	4	S/F	2256.1	2257.8	3.9	10.0			QL=6 ST=2 TYP=3
02	2695	LEAR	4	S/F	0156.1	0159.0	6.7	23.0			QL=6 ST=2 TYP=3
	8800	LEAR	4	S/F	0157.3	0158.3	4.3	17.0			QL=6 ST=2 TYP=3
	8800	PALE	8	S	0158.3	0158.5	.3	13.0			QL=6 ST=2 TYP=3
	2800	OTTA	240	R	1505.0	1520.0	15.0	2.8	1.4		
04	2800	OTTA	1	S	2045.0	2046.0	4.0	2.4	0.8		
05	2800	OTTA	20	GRF	1755.0	1820.0	65.0	2.4	1.2		
06	2800	OTTA	21	GRF	1500.0	1700.0	270.0	5.2	3.4		
	2800	OTTA	20	GRF	1718.0	1722.0	27.0	2.6	1.3		
	2695	PALE	8	S	1805.5	1805.6	.3	17.0			QL=6 ST=2 TYP=3
	8800	PALE	8	S	1805.6	1805.6	.5	32.0			QL=6 ST=2 TYP=3
07	2695	LEAR	47	GB	0205.0	0206.1	2.6	52.0			QL=6 ST=2 TYP=5
	2695	PALE	47	GB	0205.6	0206.1	.7	61.0			QL=6 ST=2 TYP=5
	8800	LEAR	8	S	0516.1	0516.3	.5	16.0			QL=6 ST=2 TYP=3
	2800	OTTA	26A	FAL	1440.0	1715.0	155.0	-6.6	-3.3		
	2800	OTTA	1	S	1526.0	1528.0	4.0	2.6	1.2		
	2800	OTTA	20	GRF	1600.0	1605.0	30.0	2.6	1.3		
08	2800	OTTA	21	GRF	1340.0	1350.0	20.0	3.8	1.9		
	2800	OTTA	4	S/F	1344.0	1345.2	2.0	12.4			
	2800	OTTA	22	GRF	1410.0	1440.0	150.0	9.8	3.8		
	2800	OTTA	20	GRF	1645.0	1700.0	35.0	2.6	1.3		
09	2695	LEAR	4	S/F	0215.8	0217.3	3.8	10.0			QL=6 ST=2 TYP=3
	8800	LEAR	20	GRF	0216.0	0239.8	26.0D	10.0			QL=6 ST=2 TYP=2
	2800	OTTA	240	R	1600.0	1620.0	20.0	4.6	3.0		
10	2800	OTTA	2	S/F	1351.8	1352.1	1.2	4.6	2.3		
	2800	OTTA	20	GRF	1725.0	1745.0	85.0	4.6	2.3		
11	2800	OTTA	20	GRF	1635.0	1735.0	135.0	2.8	1.3		
12	2800	OTTA	240	R	1425.0	1500.0	35.0	3.0	1.5		
	2800	OTTA	1	S	1757.0	1758.2	4.0	3.0	1.4		
	2800	OTTA	22	GRF	1910.0	2025.0	100.0	2.0			
	2695	PENT	1	S	2128.0	2129.0	2.0	2.4	.2		
13	2800	OTTA	20	GRF	1800.0	1910.0	235.0	16.6	8.3		
14	2695	LEAR	20	GRF	0655.6	0700.0	17.4	11.0			QL=6 ST=2 TYP=2
	8800	PALE	8	S	2052.6	2052.6	.5	44.0			QL=6 ST=2 TYP=3
15	2800	OTTA	240	R	1445.0	1555.0	70.0	5.4	2.4		
	2800	OTTA	20	GRF	1745.0	1800.0	40.0	2.4	1.2		
16	2800	OTTA	240	R	1445.0	1448.0	3.0	1.6	.8		
	2800	OTTA	240	R	1620.0	1635.0	15.0	1.6	.8		
17	8800	LEAR	8	S	0257.5	0257.6	1.1	24.0			QL=6 ST=2 TYP=3
	2800	OTTA	1	S	1832.0	1832.5	1.0	2.8	1.2		
	2695	SGMR	8	S	1832.1	1832.3	.4	19.0			QL=6 ST=2 TYP=3
	2800	OTTA	20	GRF	2025.0	2110.0	55.0	2.2	1.2		
	2695	PENT	2	S/F	2129.5	2130.9	3.3	6.4	3.2		
20	2800	OTTA	20	GRF	1837.0	1839.0	20.0	1.8	.9		
21	8800	LEAR	4	S/F	0638.0	0638.8	5.1	23.0			QL=6 ST=2 TYP=3
	2695	LEAR	4	S/F	0638.0	0638.8	13.8	34.0			QL=6 ST=2 TYP=3
24	2800	OTTA	240	AR	1545.0	1620.0	35.0	2.4	1.2		
	2800	OTTA	1	S	1557.0	1559.2	10.0	2.4	1.0		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JANUARY 1983

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
24	2800	OTTA	20 GRF	1700.0	1825.0	140.0	3.4	1.5		
	2695	PENT	1 S	2122.0	2124.0	5.0	2.6	1.0		
26	2800	OTTA	20 GRF	1535.0	1617.0	575.0	2.6	1.3		
	2695	PENT	22 GRF	2110.0	2155.0	60.0	2.4	1.0		
27	8800	LEAR	20 GRF	0333.0	0336.1	12.0	11.0			QL=6 ST=2 TYP=2
	2800	OTTA	20 GRF	1800.0	1927.0	125.0	2.6	1.3		
	2800	OTTA	2 S/F	2125.0	2125.2	1.0	6.2	1.6		
28	2800	OTTA	240AR	1430.0	1440.0	10.0	2.8			
	2800	OTTA	3 S	1434.2	1434.7	4.0	11.4	2.8		
	2695	SGMR	8 S	1434.5	1434.6	.3	13.0			QL=6 ST=2 TYP=3
	2695	PENT	1 S	2309.0	2309.1	1.2	7.8	1.9		
29	2800	OTTA	240 R	1839.0	1842.0	3.0	2.8	1.2		
	2800	OTTA	23 GRF	1910.0	1934.0	120.0	6.0			
	2800	OTTA	3 S	1932.5	1933.0	1.2	10.4	5.0		
	2695	SGMR	8 S	1932.8	1932.8	.5	19.0			QL=6 ST=2 TYP=3
30	2800	OTTA	1 S	1547.0	1549.0	7.0	2.2	1.1		
31	2800	OTTA	240 R	1620.0	1645.0	25.0	5.0	2.5		
	2800	OTTA	20 GRF	1845.0	1900.0	75.0	4.6	2.3		

Observatories:

BERN = Berne MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill
LEAR = Learmonth ATHN = Athens PALE = Palehua

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset on Noise Storm
44 Noise Storm In Progress
45 Complex
46 Complex F
47 Great Burstise Storm
48 Major
49 Major +

BOULDER GEOMAGNETIC SUBSTORM LOG

January 1983

DATE	ONSET TIME	DIR	COMMENTS
01/01			Field intermittently unsettled with no distinctive substorm activity.
01/02			Field slightly unsettled.
	1310	West	
01/03			Field unsettled 0600-1700 UT.
	1210		Moderate substorm Anchorage to College.
01/04			Field intermittently unsettled.
	0905	West	
	1225	West	
01/05			Field unsettled 0700-1600 UT.
	0835		Weak substorm.
	1335		Weak substorm.
01/06			Field slightly unsettled.
01/07			Field slightly unsettled.
01/08			Field intermittently unsettled.
	1225	West	
01/09	0905		Substorm response along auroral oval only.
	1545	SSC	Immediate onset of strong substorm, several injections with recovery near 1900 UT. Field unsettled balance of day.
01/10			Field active at high latitudes and storm level at mid/low latitudes through 1200 UT. Strong ring current established by 0600 UT with slow recovery through 1800 UT.
	0330	East	
	0450	Center	
	0925	West	
01/11			Field slightly unsettled.
	2305		Positive impulse H-component all mid/low latitude stations.
01/12			Field intermittently unsettled.
	0450	East	
	0910	West	
	1305	West	
01/13			Field intermittently unsettled.
	1500	West	
01/14			Field intermittently unsettled.
	0720		Weak substorm.
	1310	West	
01/15			Field intermittently active.
	1045		Weak substorm.
	1440	West	
	1525		Strong injection into existing substorm.
01/16			Field intermittently active.
	0440	East	Weak substorm, several minor injections.
	0800	West	Weak substorm.
	0940	West	Initial onset at College. Slow expansion northward and eastward.
	1150	West	
	1525	West	
01/17			Field intermittently unsettled.
	0915	West	Several injections.
	1200	West	
	1300	West	
01/18			Field intermittently active.
	0810	West	Weak substorm.
	1015	West	Strong substorm.
	1120	West	
	1310	West	Several injections with recovery near 1630 UT.
01/19			Field intermittently unsettled.
	0925	West	
	1245	West	Several injections with recovery near 1730 UT.
01/20			Field unsettled all day.
	0545		Localized substorm Norman Wells to Inuvik.
	0825	West	
01/21			Field intermittently unsettled.
	0505	East	Weak substorm.
01/22			Field unsettled 0600-1500 UT.
	0630	West	
	0900	West	
	1140		Localized substorm vicinity College with several injections.
01/23			Field intermittently unsettled.
	0825		Weak substorm Norman Wells to Inuvik.
01/24			Field unsettled all day.
	0450	Center	
01/25			Field intermittently active.
	1010	West	
	1115	West	
	1530		Localized substorm Norman Wells to Inuvik.
01/26			Field intermittently unsettled.
	0535		Weak substorm.
	0950	West	
	1305	West	
01/27			Field intermittently unsettled with no distinctive substorm activity.
01/28	0740		Weak substorm.
	1345	West	Slow onset. Field unsettled balance of day.
01/29			Field intermittently unsettled.
	1120		Weak substorm College to Ft. Yukon.
	1525	West	Moderate substorm, several injections with recovery near 1900 UT.
01/30	0650	Center	Weak substorm.
	0800	West	
	1035	West	Moderate substorm.
01/31			Field unsettled all day.
	1320		Weak substorm.

INFERRED IP MAGNETIC FIELD

BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
2023	JUL 30	-	- -	- -	-	-	-	-	- -	-	-	-	-	-	-	- -	- -	-	TA -	TA -	- -	-	-	-	AT -	- -	-
2024	AUG 26	- -	-	-	TA -	TA -	-	TA -	-	-	TA -	-	-	-	-	TA -	-	TA -	-	-	-	-	TA -	-	-	-	-	-
2025	SEP 22	-	-	-	-	-	-	-	AT -	TA -	-	-	-	TA -	-	TA -	TA -	TA -	-	AT -	-	TA -	AT -	TA -	AT -	TA -	TA -	TA -
2026	OCT 19	AT -	TA -	TA -	-	-	-	-	TA -	TA -	-	TA -	-	-	-	-	TA -	-	-	-	-	-	AT -	TA -	-	-	-	-
2027	NOV 15	-	-	-	AT -	AT -	-	-	-	-	AT -	-	-	-	-	-	TA -	-	TA -	TA -	AT -	-	-	-	-	-	AT -	-
2028	DEC 12	TA -	-	-	-	AT -	AT -	-	-	AT -	TA -	-	-	-	-	-	-	AT -	-	AT -	TA -	-	-	-	-	TA -	-	-
2029	1982 JAN 8	-	-	-	-	-	TA -	TA -	-	-	-	-	-	-	TA -	-	-	TA -	-	-	-	AT -	-	-	-	AT -	-	-
2030	FEB 4	-	-	-	TA -	TA -	TA -	TA -	-	-	TA -	-	-	-	-	-	TA -	-	-	-	-	-	-	TA -	-	-	TA -
2031	MAR 3	-	-	-	-	-	TA -	TA -	-	TA -	TA -	-	TA -	-	-	TA -	-	-	-	TA -	TA -	-	-	-	-	-	AT -
2032	MAR 30	-	TA -	-	TA -	-	-	-	-	-	-	TA -	-	-	-	-	-	AT -	TA -	-	TA -	-	-	-	-	-	-	-
2033	APR 26	-	AT -	-	-	-	-	-	TA -	TA -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	AT -	AT -	-	-
2034	MAY 23	-	-	-	AT -	-	TA -	-	-	-	-	-	AT -	-	-	-	-	-	-	-	-	-	-	-	-	-	TA -	-
2035	JUN 19	-	-	-	-	-	-	-	-	-	-	-	-	TA -	-	-	-	-	-	-	-	-	-	TA -	-	-	-	-
2036	JUL 16	-	- -	-	- -	- -	TA -	-	-	-	-	AT -	-	- -	-	AT -	- -	-	-	-	-	-	-	-	-	-	-	-
2037	AUG 12	-	-	-	- -	-	-	- -	-	TA -	-	- -	TA -	TA -	TA -	-	- -	-	TA -	-	TA -	-	-	-	-	-	-	-
2038	SEP 8	TA -	AT -	-	-	-	-	-	-	-	-	-	-	-	TA -	-	AT -	-	-	-	-	-	TA -	-	-	-	-	-
2039	OCT 5	-	AT -	-	AT -	-	-	-	-	-	AT -	TA -	-	-	-	-	AT -	-	-	-	-	-	-	-	TA -	-	-	-
2040	NOV 1	AT -	-	-	-	AT -	-	-	-	-	AT -	-	-	-	-	AT -	-	-	TA -	-	-	-	-	-	TA -	AT -	-	-
2041	NOV 28	TA -	-	- -	- -	-	AT -	-	-	-	-	-	-	TA -	TA -	-	-	-	-	-	-	-	AT -	AT -	-	-	-	-
2042	DEC 25	-	-	AT -	AT -	-	-	-	TA -	-	-	-	-	-	-	-	-	-	TA -	TA -	-	-	-	AT -	-	-	-	-
2043	1983 JAN 21	- -	-	-	-	-	-	-	-	-	TA -	-																

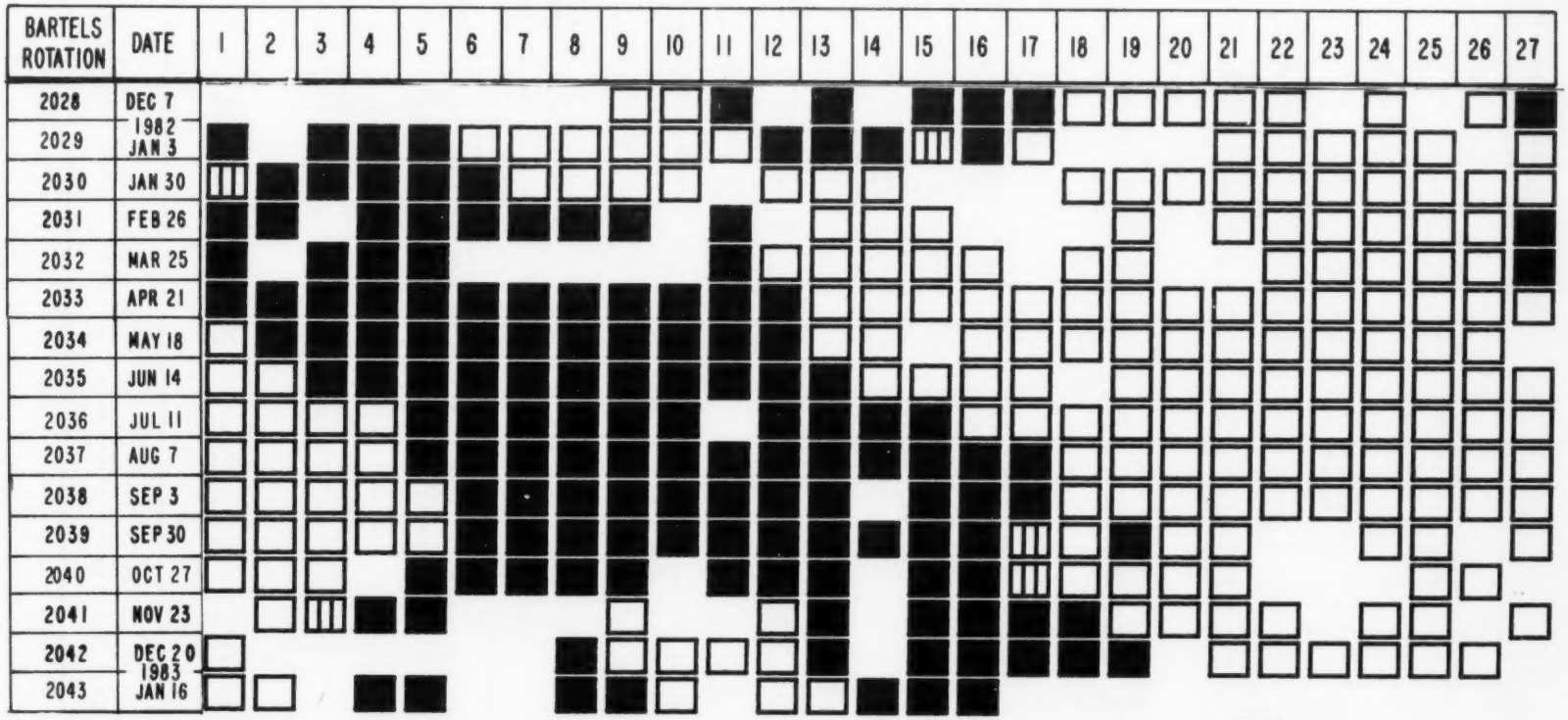
▒ = definitely towards the sun □ = definitely away from the sun

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day. The Thule magnetometer ceased operating in August 1981.

based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day. The Thule magnetometer ceased operating in August 1981.

STANFORD MEAN SOLAR MAGNETIC FIELD



POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: □ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

No box visible indicates no data available for that day.

NOTE: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

1982 1983

day	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
01	-20	-19	.	-6	.	.	49	89	22	-31	42	-9
02	-44	-9	.	-6	33	85	19	102	53	-15	.	.
03	-29	-20	.	23	38	75	19	84	37	-18	.	-89
04	-3	-39	-17	43	54	71	52	66	18	-38	10	-81
05	9	-44	3	48	80	53	85	68	-6	.	-42	-73
06	19	-21	38	16	82	35	105	55	-41	-63	.	-22
07	43	.	60	41	77	29	81	30	-54	-61	-90	-2
08	64	-2	57	69	80	42	63	-27	-76	-68	-64	.
09	.	.	24	74	68	54	59	-55	-90	.	-29	53
10	15	16	.	70	54	63	33	-74	-93	-54	-20	46
11	24	34	61	65	50	87	-30	-93	-96	-21	26	37
12	33	35	46	79	58	79	-87	-124	-100	1	29	53
13	.	.	.	87	.	43	-118	-125	-70	19	43	84
14	.	.	.	77	78	9	-121	-120	-35	34	28	84
15	.	.	86	72	51	-39	-144	-112	-7	37	.	.
16	14	21	93	51	-13	-112	-149	.	-1	52	8	39
17	16	.	71	38	-51	-164	-141	-49	4	.	57	10
18	5	4	46	27	-93	-193	-124	-28	-43	.	.	.
19	15	20	28	-15	-184	-201	-93	-14	55	.	64	-87
20	27	31	-6	-57	-237	-189	-59	12	33	22	32	-119
21	38	25	-38	-68	-225	.	-32	40	.	33	.	.
22	48	22	-78	-93	-170	-128	-16	44	.	.	.	.
23	41	14	-113	-132	-123	-71	-12	26	17	.	.	-25
24	28	-2	-107	-158	-69	-29	5	10	45	12	.	-3
25	10	-26	-93	-151	-56	-5	32	8	.	-1	.	31
26	-3	.	-104	-118	-40	12	39	18	54	-31	.	.
27	-34	-61	-117	-26	11	28	47	36	55	-58	-31	31
28	.	-56	-122	-26	37	38	46	72	34	.	6	3
29		-53	-77	-10	46	48	25	57	20	.	42	-14
30		.	-26	19	59	61	39	52	.	.	59	-51
31		.		46		53	64		-11		35	-91

DECEMBER 1982 DATA

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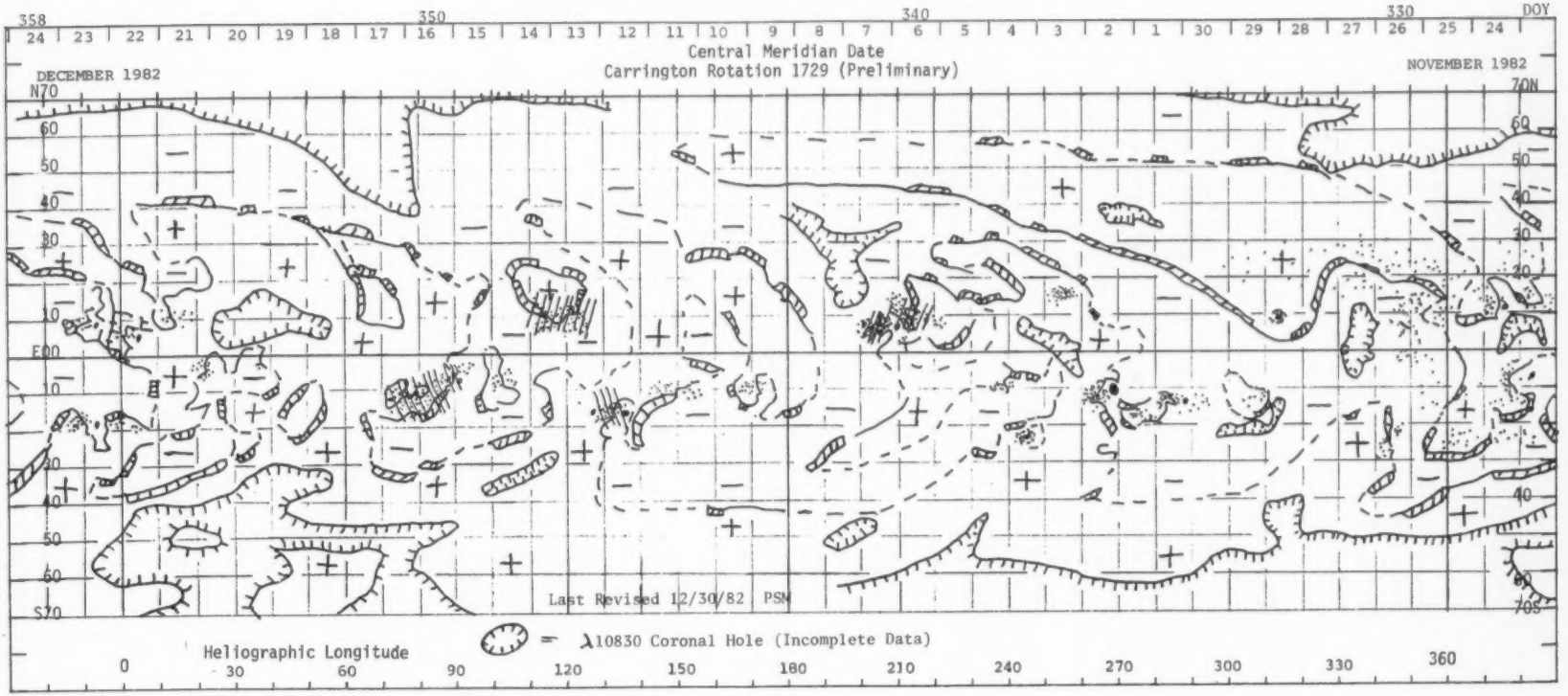
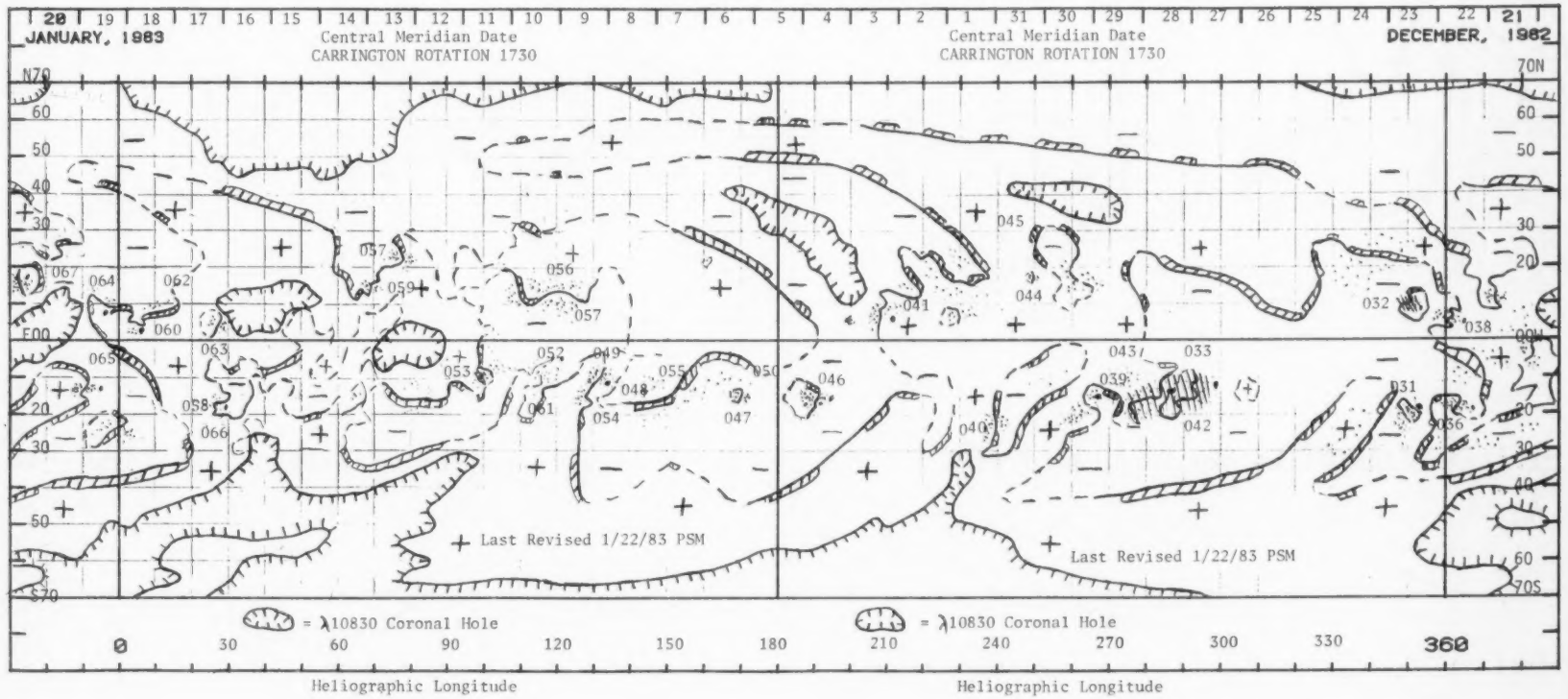
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1729 (PRELIMINARY)



Hα SYNOPTIC CHART

CARRINGTON ROTATION 1730 (PRELIMINARY)

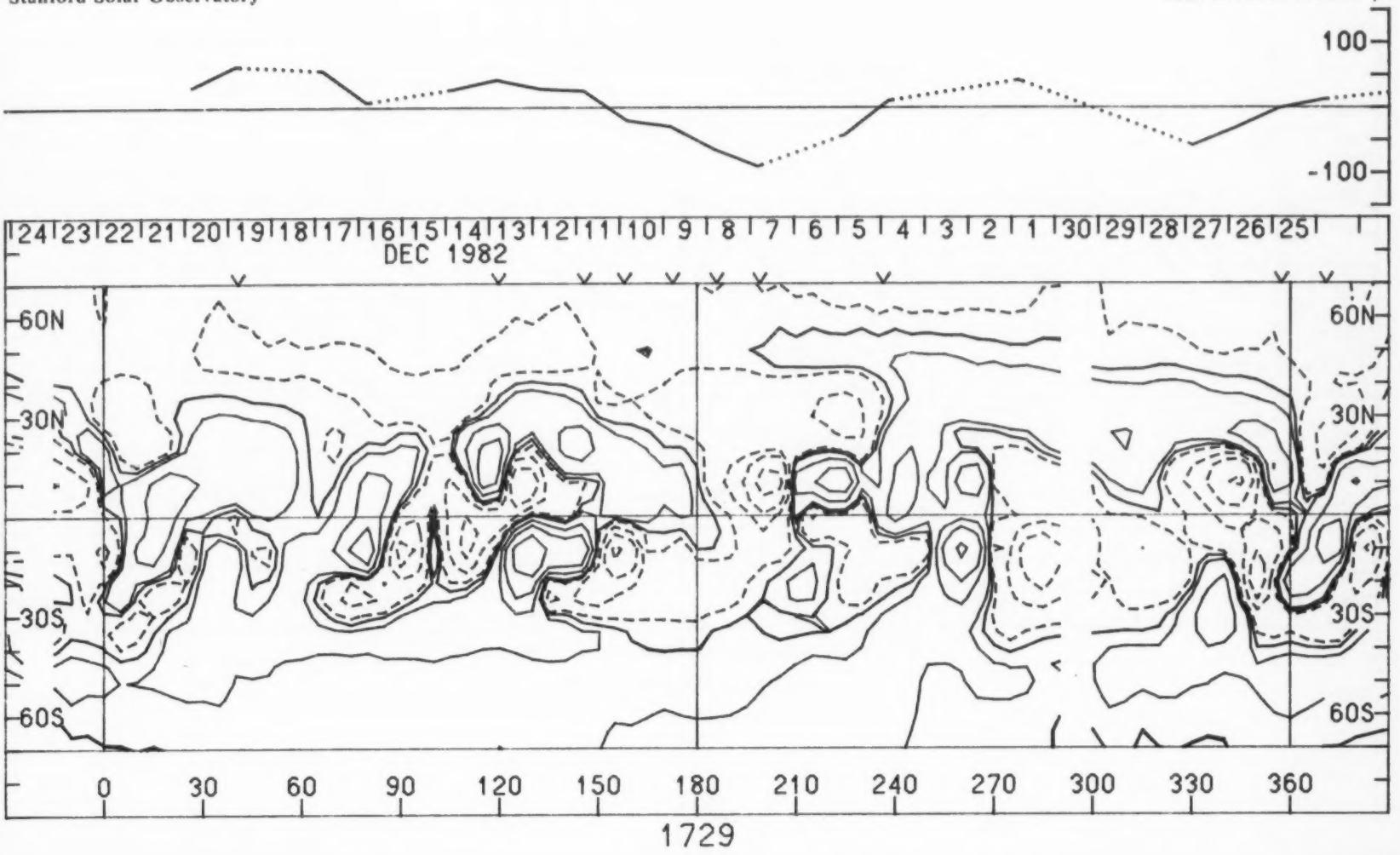


38
Dec 82

SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION 1729

Stanford Solar Observatory

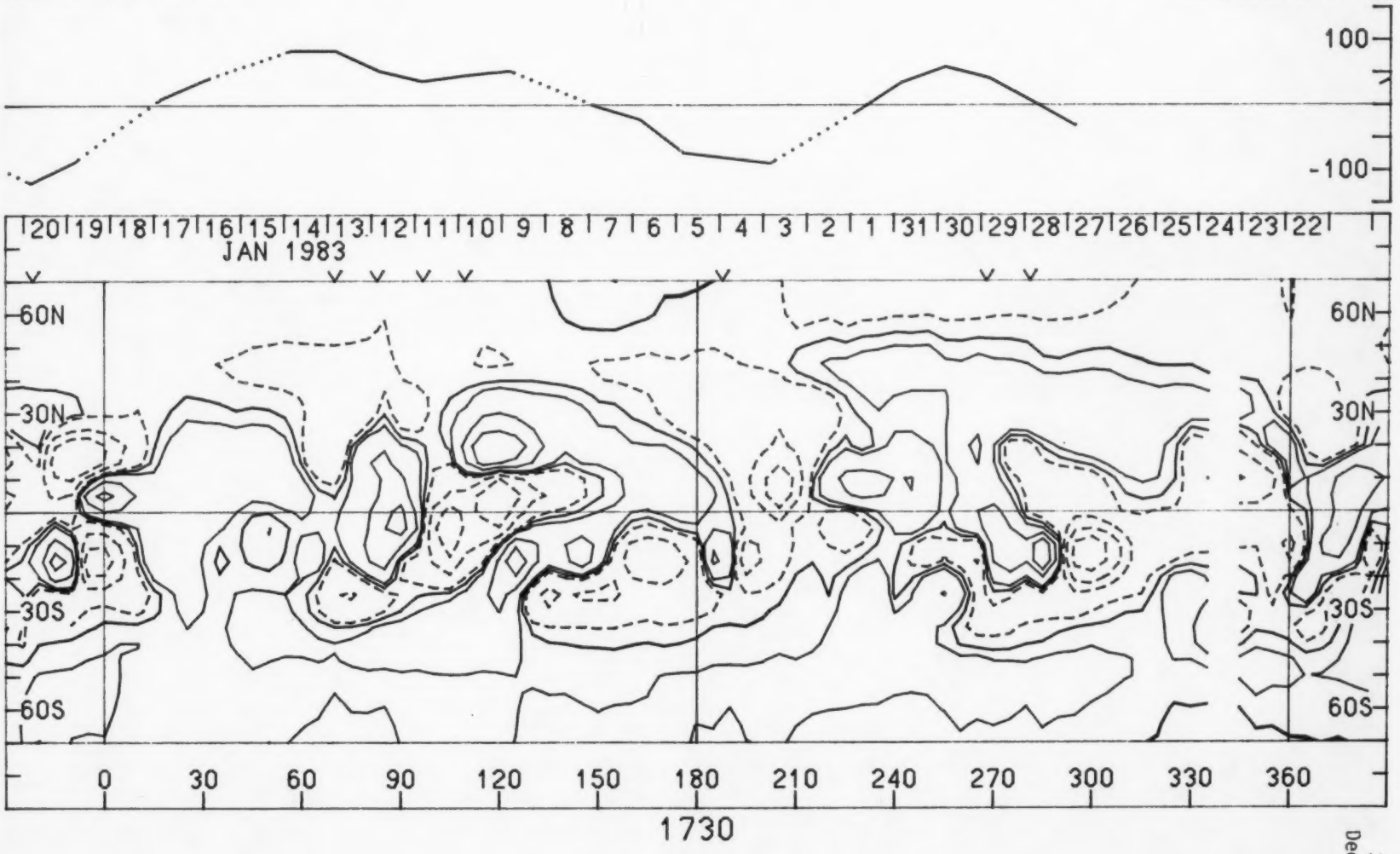
0, ±100, 200, 500... μT



SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION 1730

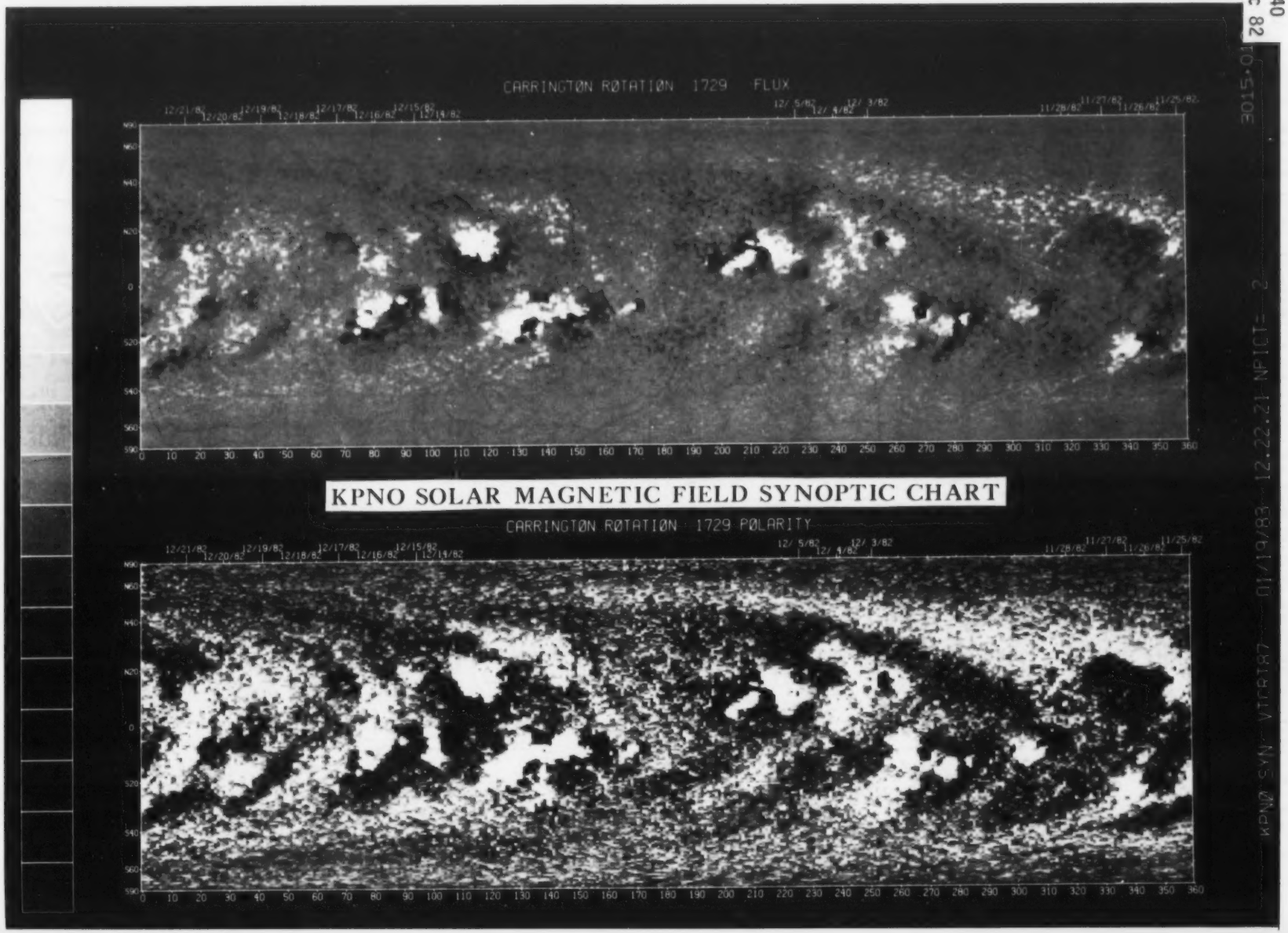
Stanford Solar Observatory

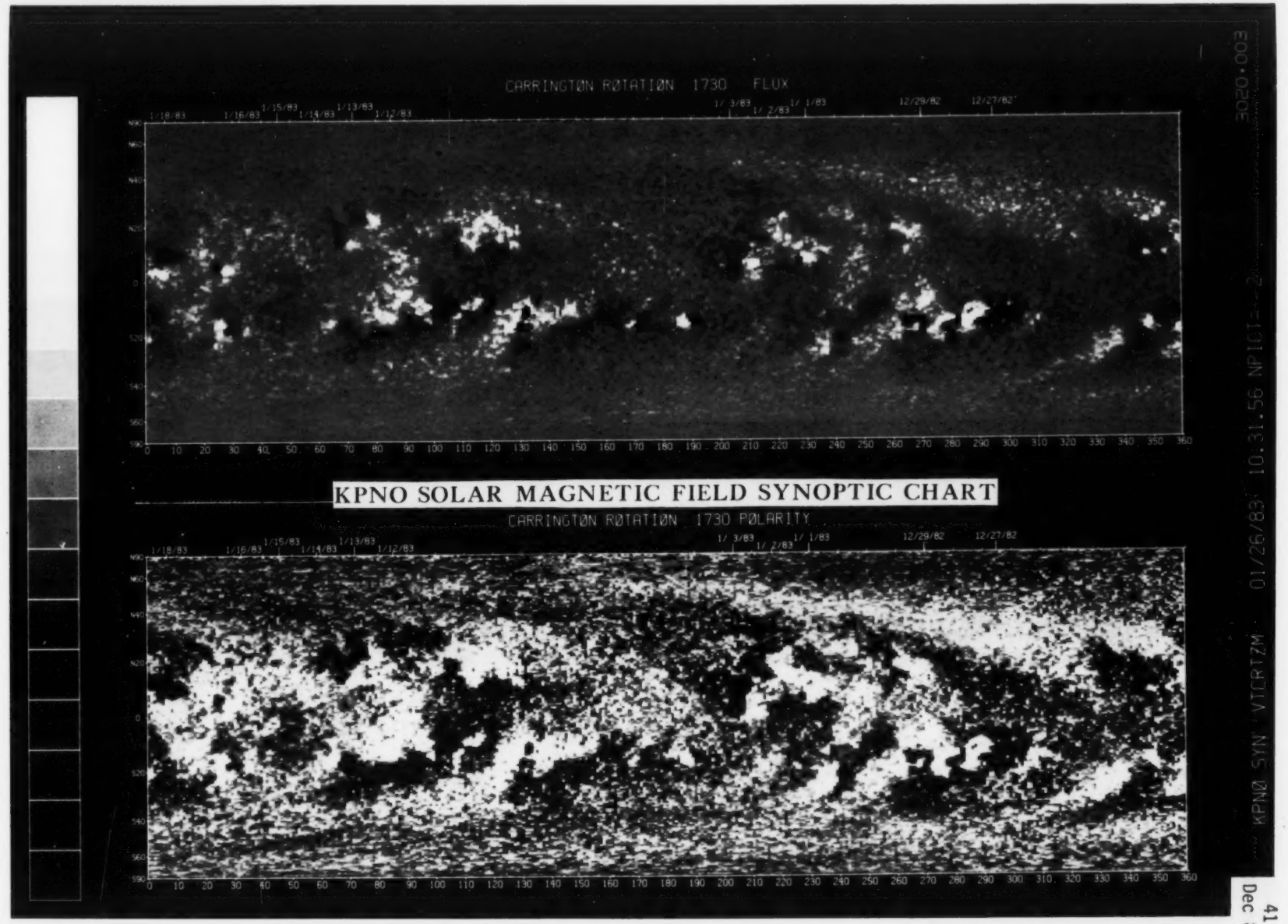
0,±100,200,500... μT



1730

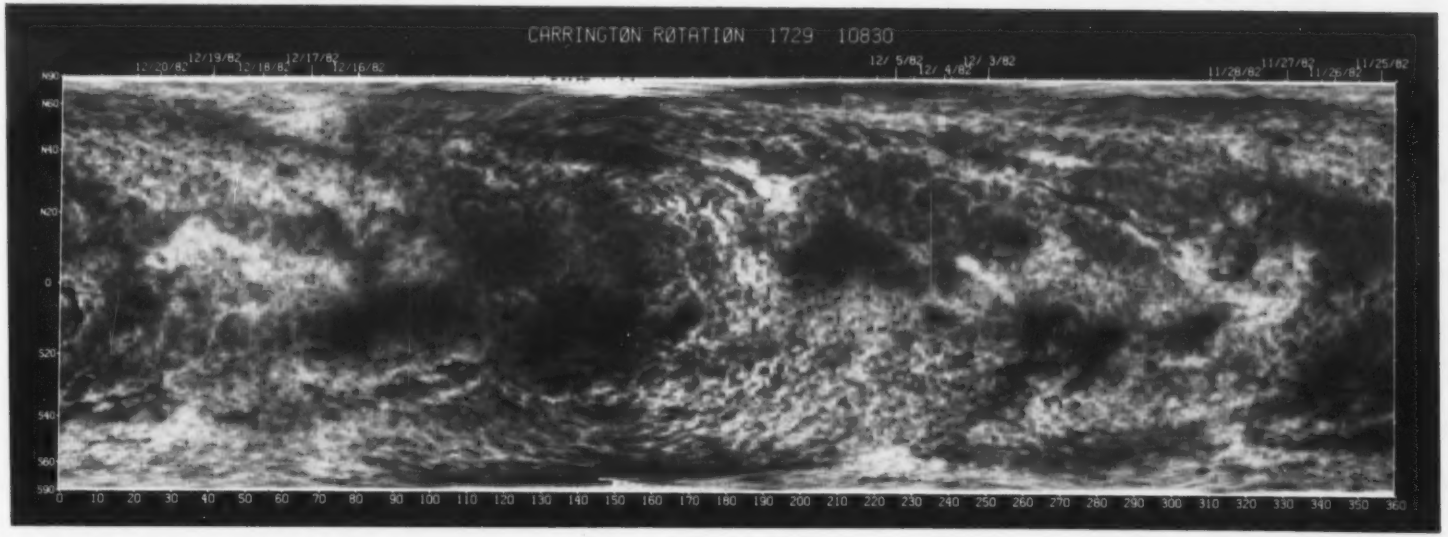
39
Dec 82


CARRINGTØN RØTATIØN 1729 FLUX
CARRINGTØN RØTATIØN 1729 PØLARITY
KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART


CARRINGTØN RØTATIØN 1730 FLUX
1/18/83
1/16/83
1/15/83
1/14/83
1/13/83
1/12/83
1/ 3/83
1/ 2/83
1/ 1/83
12/29/82
12/27/82
KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTØN RØTATIØN 1730 PØLARITY
KPNØ SYN VTCRTZM 01/26/83 10:31:56 NPICT= 2
3020.003

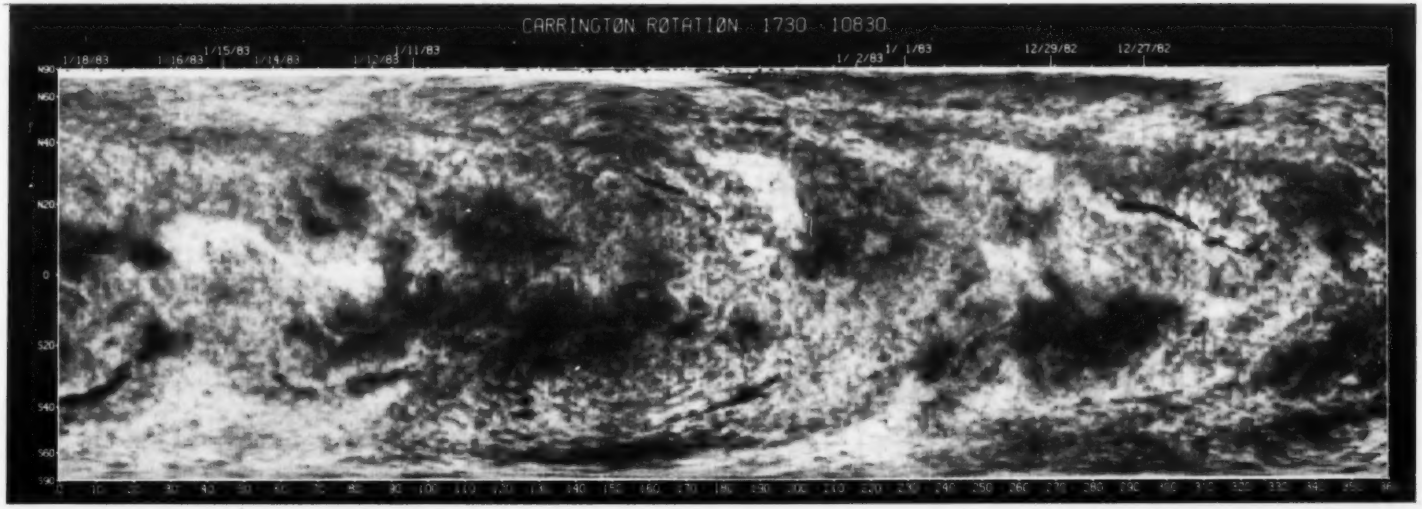
HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1729

KITT PEAK NATIONAL OBSERVATORY



HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1730

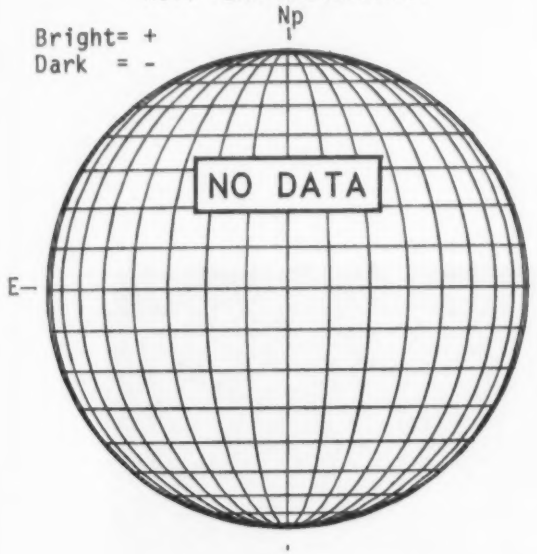
KITT PEAK NATIONAL OBSERVATORY



D E C E M B E R 01, 1 9 8 2 (P= 16.24, B_0= 0.89, L_0= 287.74)

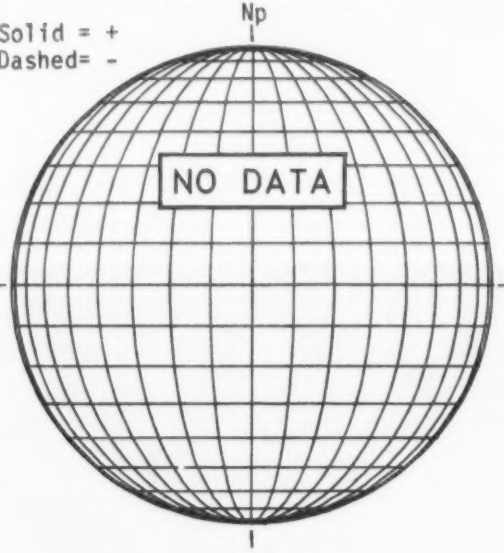
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



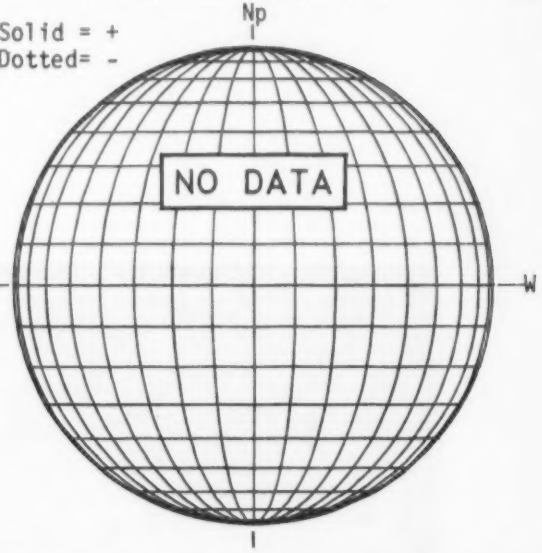
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

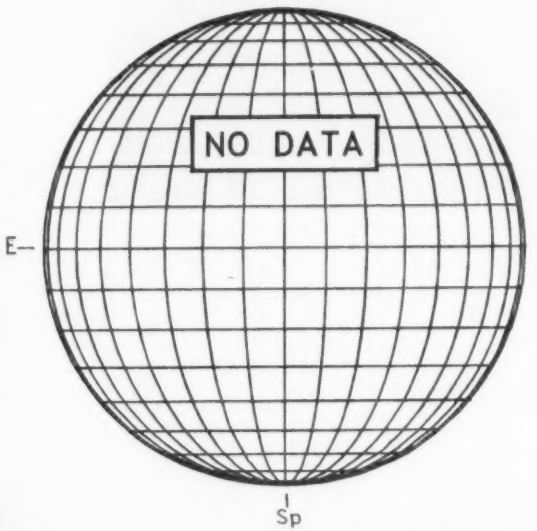


MT. WILSON MAGNETOGRAM

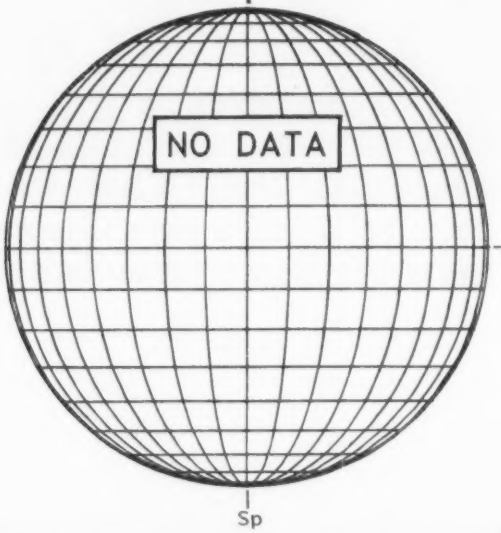
Solid = +
Dotted= -



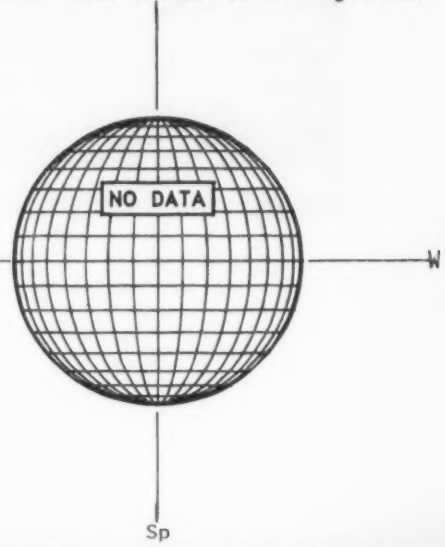
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)



D E C E M B E R 02, 1 9 8 2 (P= 15.86, B_0= 0.76, L_0= 274.56)

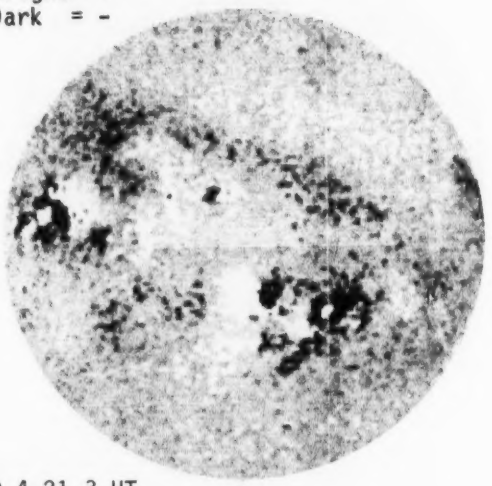
Sp Sp Sp

D E C E M B E R 02, 1 9 8 2 (P= 15.86, B_0= 0.76, L_0= 274.56)

MT. WILSON MAGNETOGRAM

Np

Bright= +
Dark = -



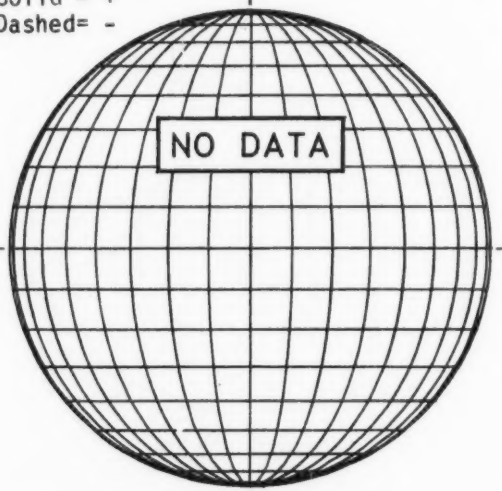
E— —W

20.4-21.3 UT

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed= -

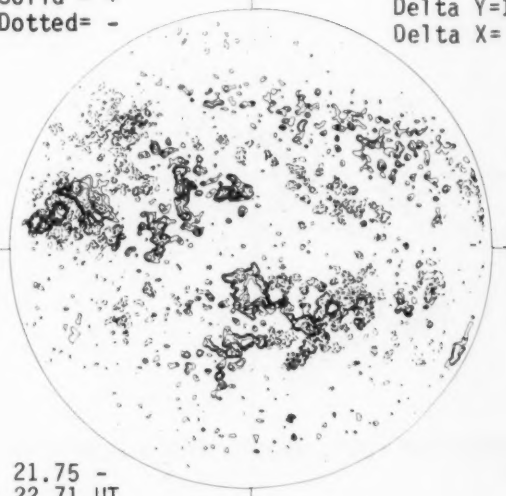


MT. WILSON MAGNETOGRAM

Np

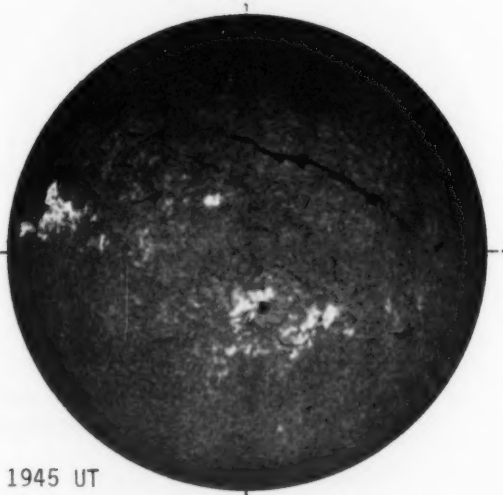
Solid = +
Dotted= -

Delta Y=12.7
Delta X= 9.6



21.75 -
22.71 UT

HOLLOMAN H-ALPHA

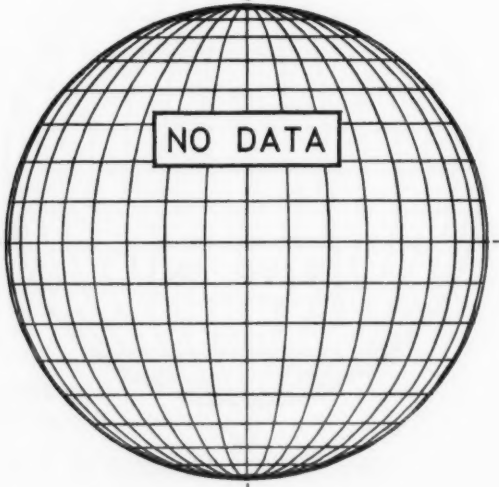


E— —W

1945 UT

Sp

BOULDER SUNSPOTS



Sp

SACRAMENTO PEAK CORONA (5303 Angstrom)

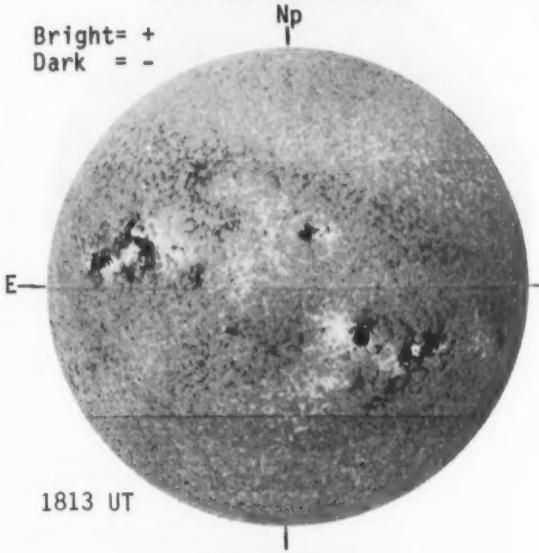
W

Sp

D E C E M B E R 03, 1 9 8 2 (P= 15.46, B_0= 0.63, L_0= 261.38)

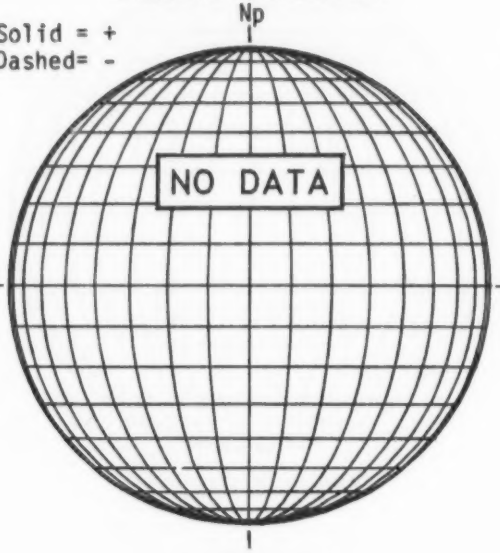
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



STANFORD MAGNETOGRAM

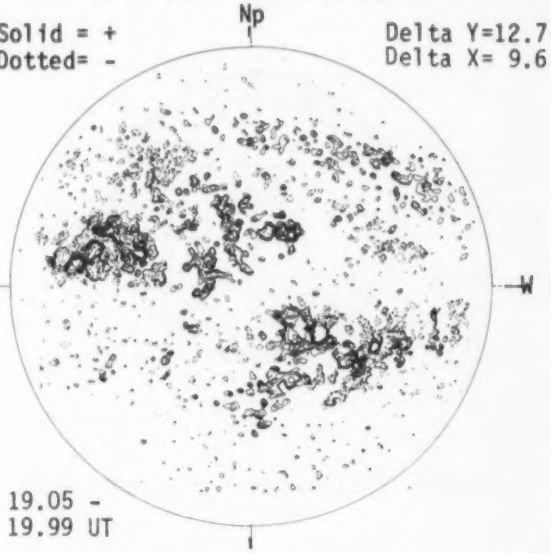
Solid = +
Dashed= -



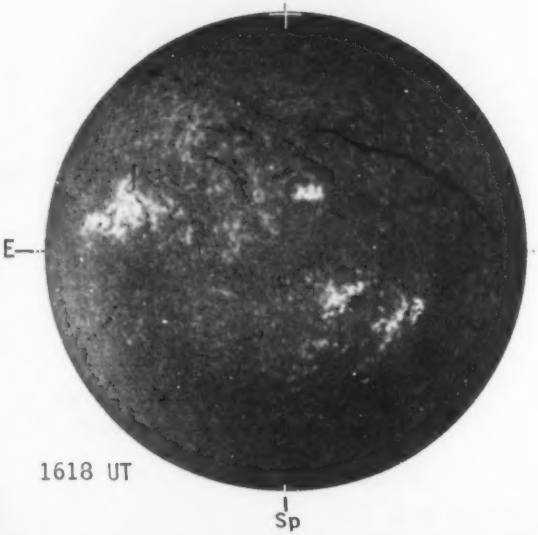
MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -

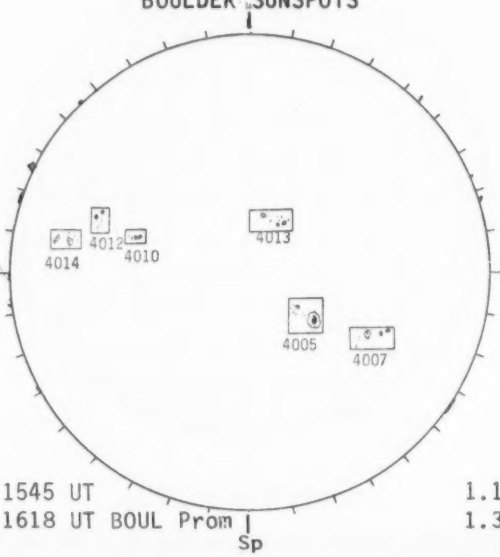
Delta Y=12.7
Delta X= 9.6



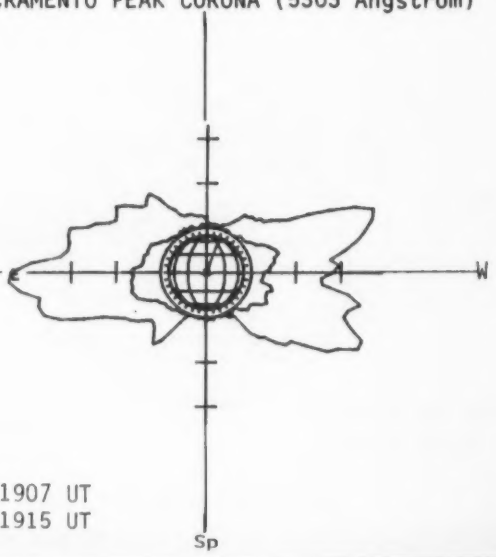
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)



D E C E M B E R 04, 1 9 8 2 (P= 15.07, B_0= 0.51, L_0= 248.20)

Sp

1618 UT BOUL Prom

Sp

1.35 R_o 1915 UT

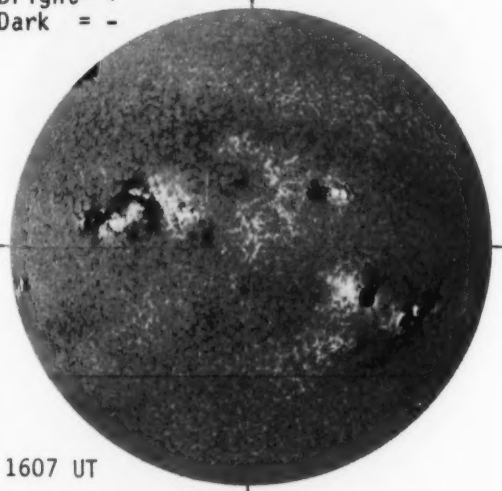
Sp

D E C E M B E R 04, 1 9 8 2 (P= 15.07, B_o= 0.51, L_o= 248.20)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -



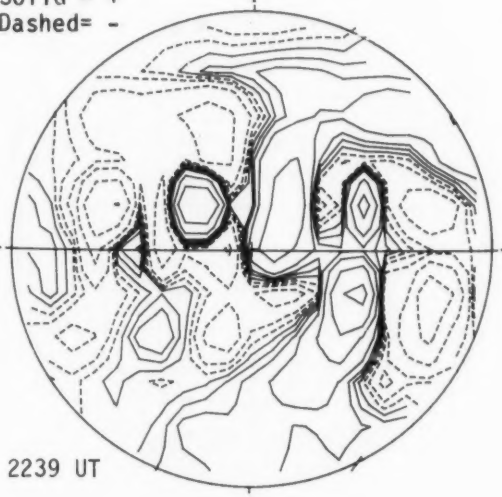
E

1607 UT

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed= -



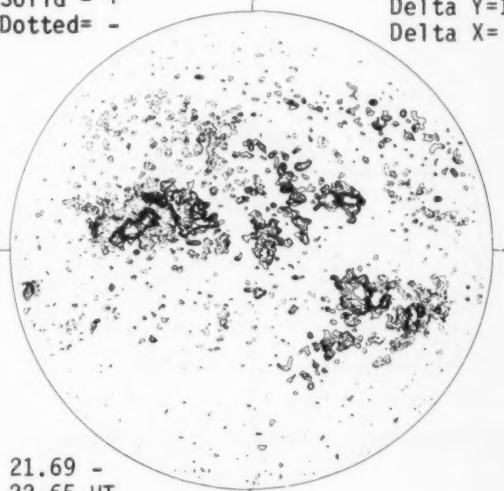
2239 UT

MT. WILSON MAGNETOGRAM

Np

Solid = +
Dotted= -

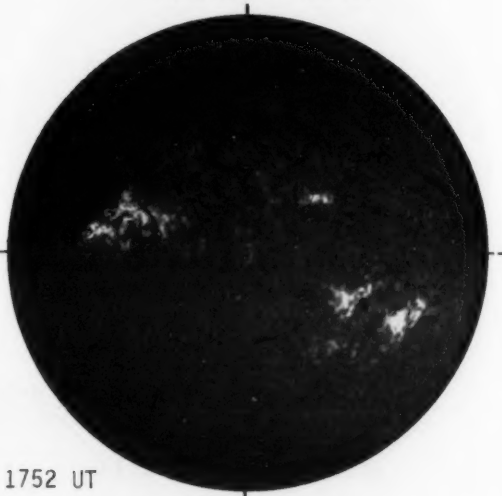
Delta Y=12.7
Delta X= 9.7



W

21.69 -
22.65 UT

HOLLOMAN H-ALPHA

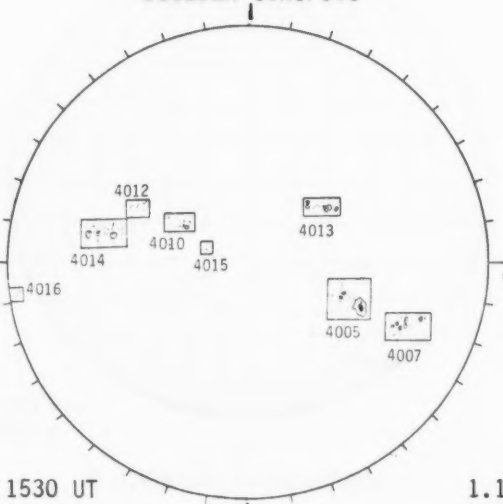


E

1752 UT

Sp

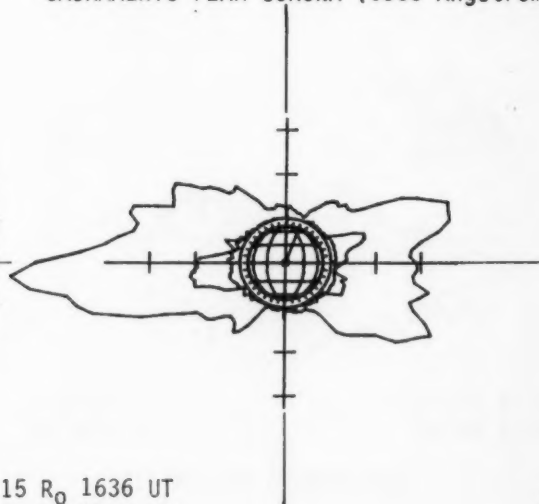
BOULDER SUNSPOTS



1530 UT

Sp

SACRAMENTO PEAK CORONA (5303 Angstrom)



W

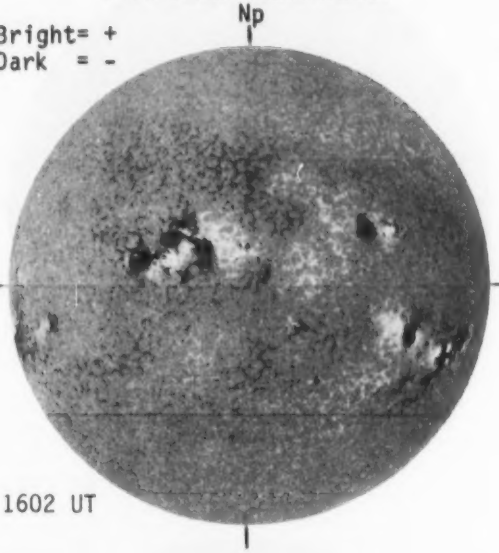
1.15 R_o 1636 UT
1.35 R_o 1621 UT
1.55 R_o 1628 UT

Sp

D E C E M B E R 05, 1 9 8 2 (P= 14.66, B_0= 0.38, L_0= 235.03)

KITT PEAK MAGNETOGRAM

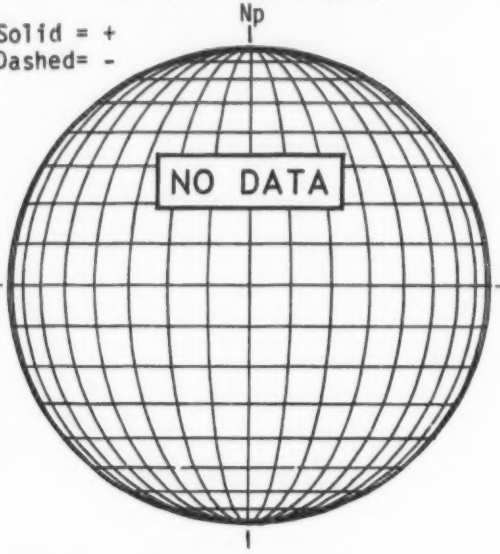
Bright= +
Dark = -



1602 UT

STANFORD MAGNETOGRAM

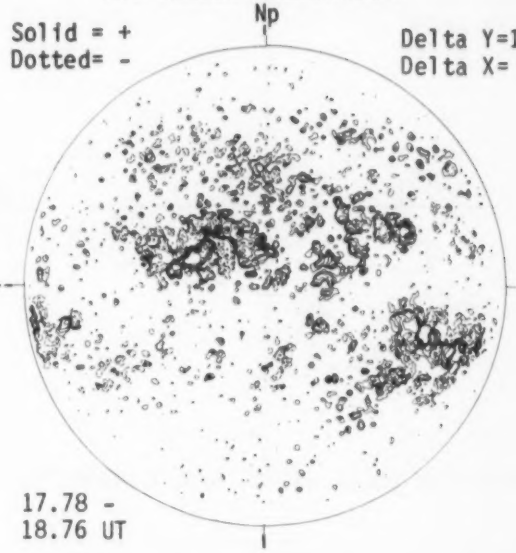
Solid = +
Dashed= -



MT. WILSON MAGNETOGRAM

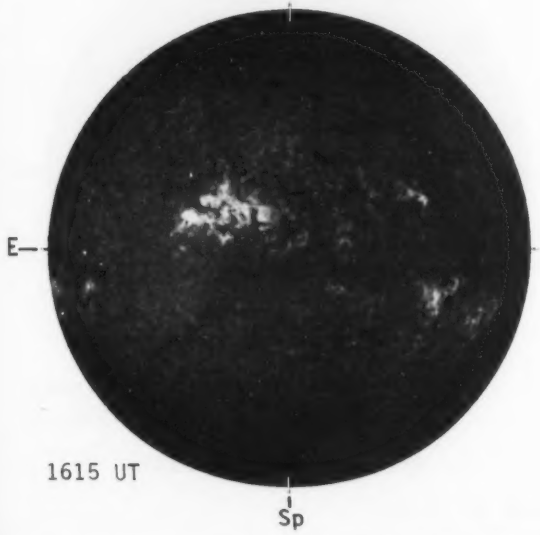
Solid = +
Dotted= -

Delta Y=12.7
Delta X= 9.6



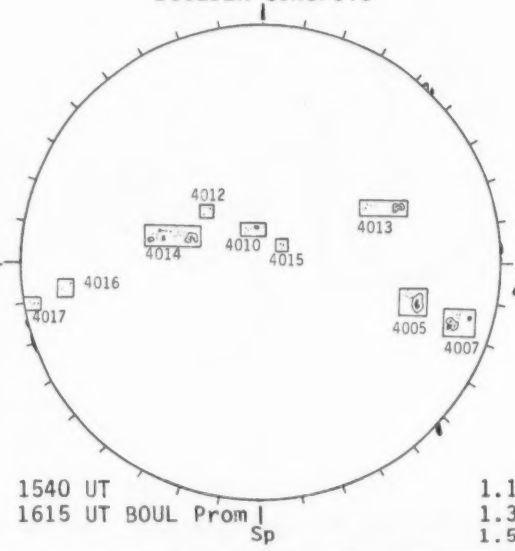
17.78 -
18.76 UT

BOULDER H-ALPHA



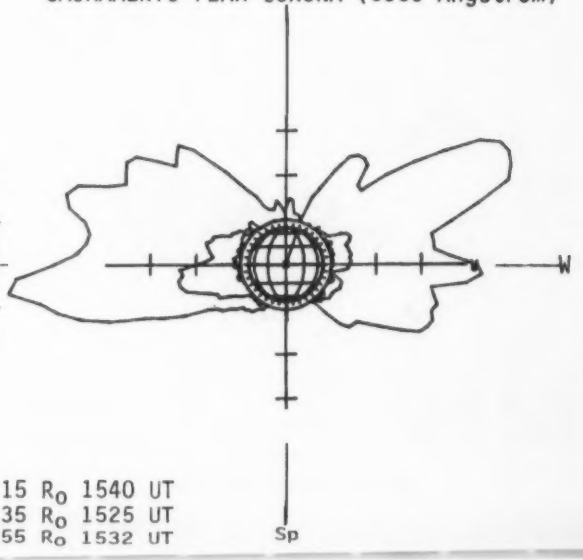
1615 UT

BOULDER SUNSPOTS



1540 UT
1615 UT BOUL Prom

SACRAMENTO PEAK CORONA (5303 Angstrom)



1.15 R_O 1540 UT
1.35 R_O 1525 UT
1.55 R_O 1532 UT

D E C E M B E R 06, 1 9 8 2 (P= 14.25, B_0= 0.25, L_0= 221.85)

1615 UT

Sp

1540 UT
1615 UT BOUL Prom

Sp

1.15 R_o 1540 UT
1.35 R_o 1525 UT
1.55 R_o 1532 UT

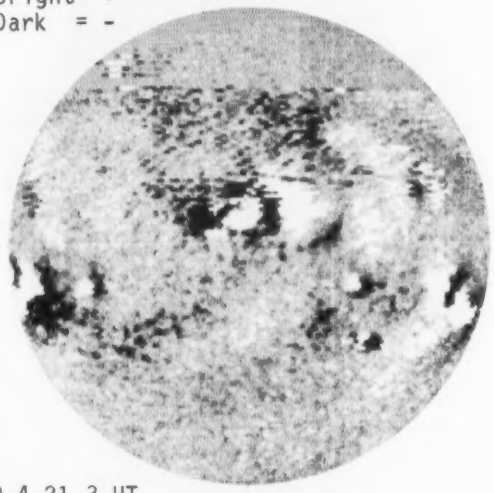
Sp

D E C E M B E R 06, 1 9 8 2 (P= 14.25, B_o= 0.25, L_o= 221.85)

MT.WILSON MAGNETOGRAM

Np

Bright= +
Dark = -



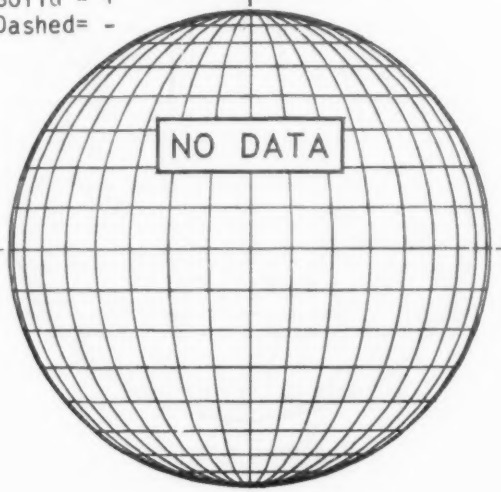
E—

20.4-21.3 UT

STANFORD MAGNETOGRAM

Np

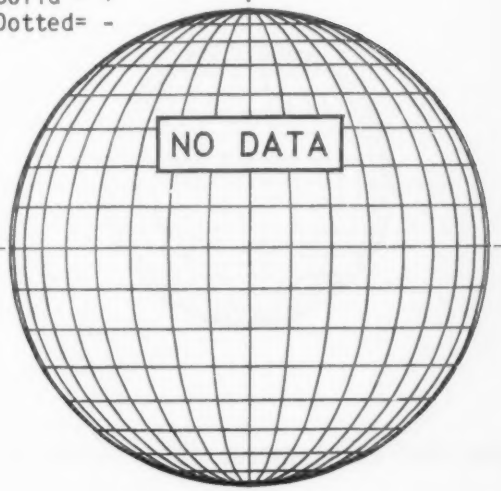
Solid = +
Dashed= -



MT. WILSON MAGNETOGRAM

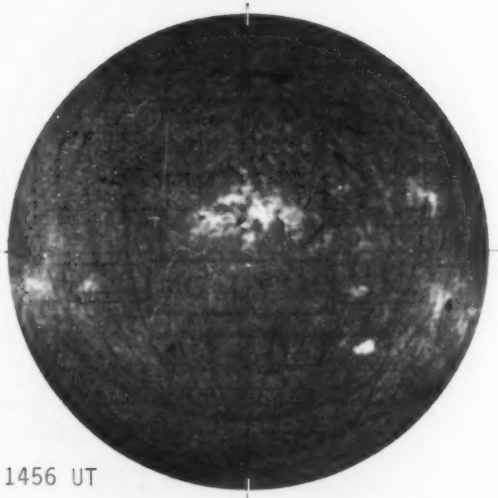
Np

Solid = +
Dotted= -



—W

BOULDER H-ALPHA



E—

1456 UT

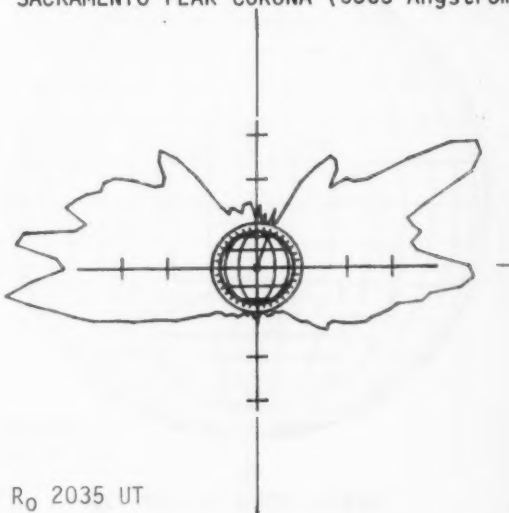
Sp

BOULDER SUNSPOTS

1735 UT
2030 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (5303 Angstrom)



—W

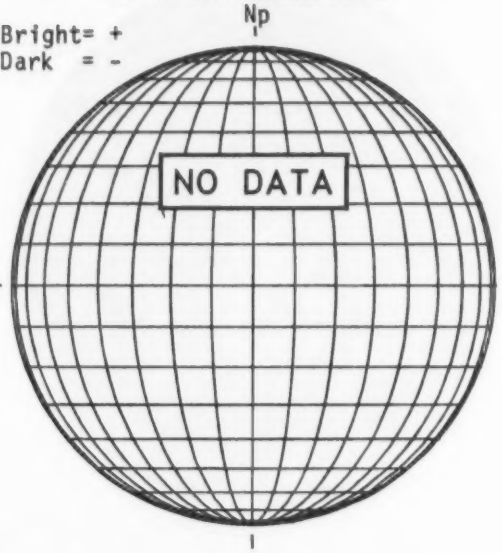
1.15 R_o 2035 UT

Sp

D E C E M B E R 07, 1 9 8 2 (P= 13.84, B_o= 0.12, L_o= 208.67)

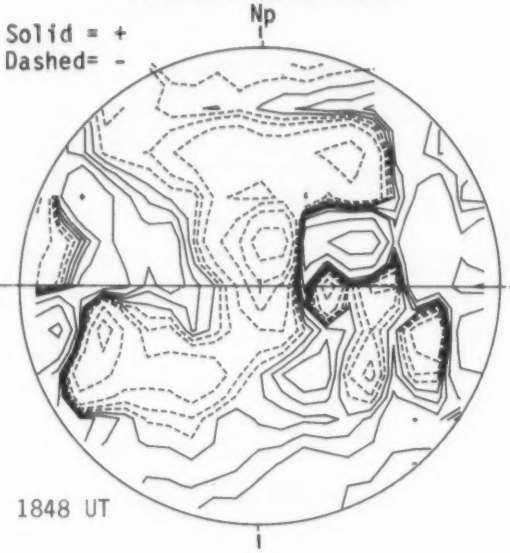
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



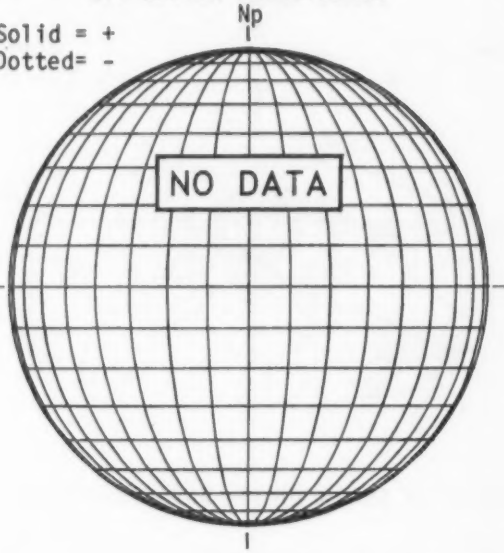
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

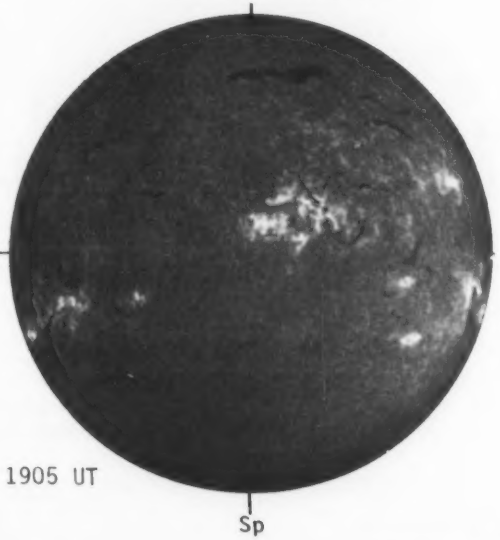


MT. WILSON MAGNETOGRAM

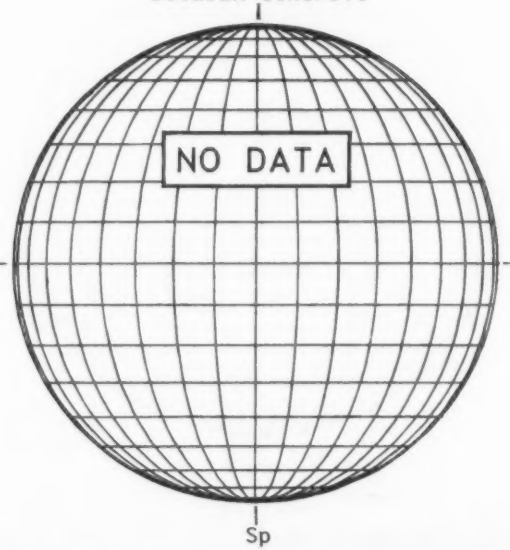
Solid = +
Dotted= -



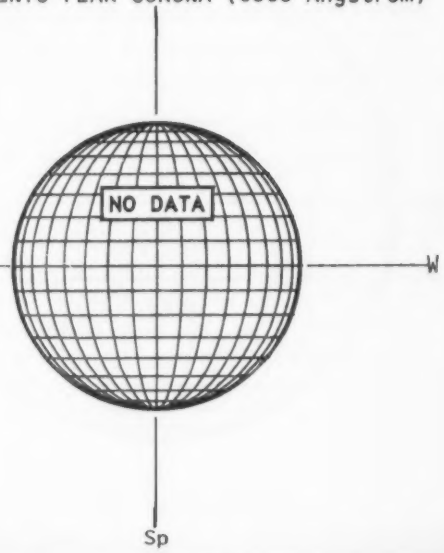
HOLLOMAN H-ALPHA



BOULDER SUNSPOTS



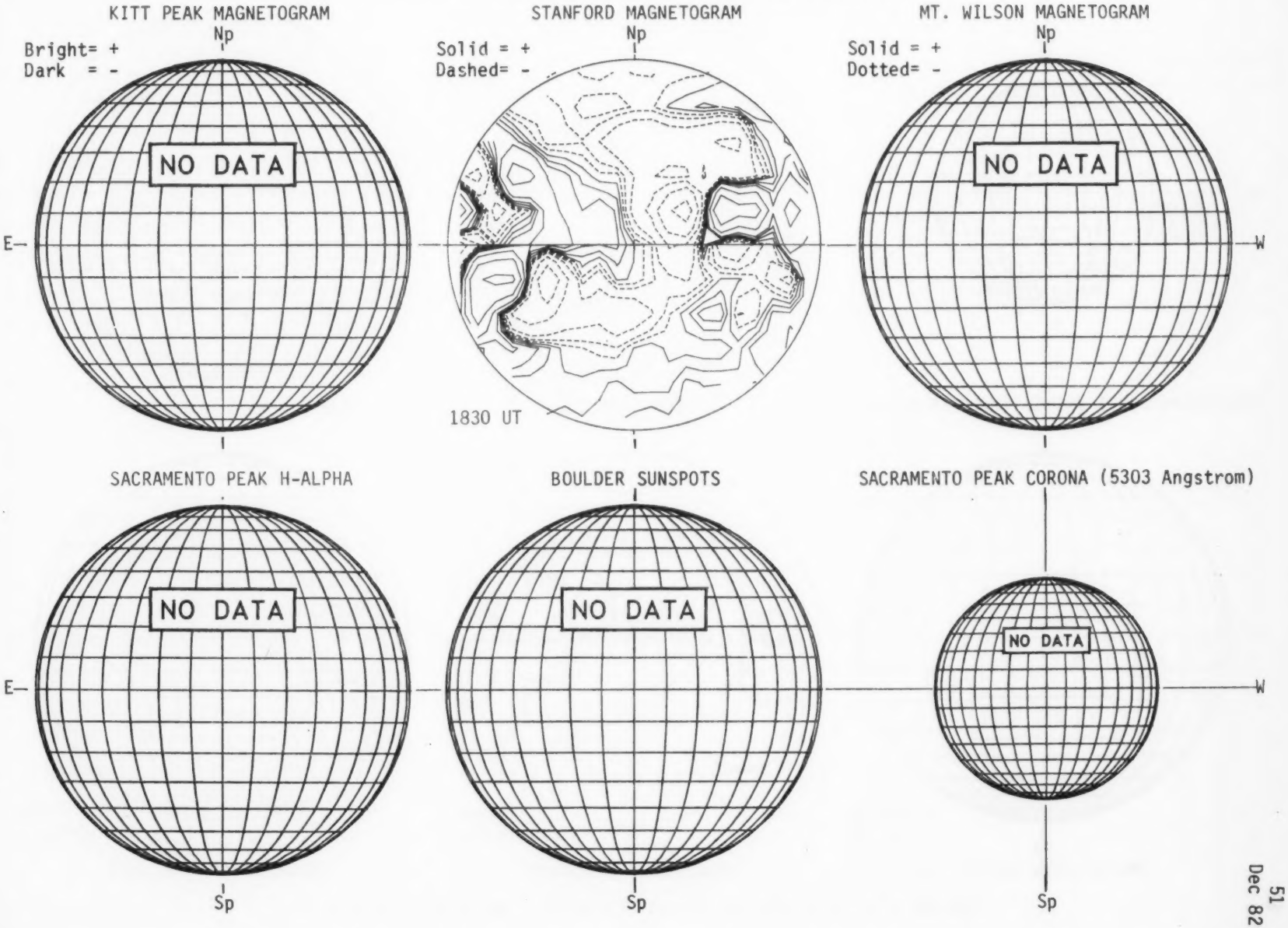
SACRAMENTO PEAK CORONA (5303 Angstrom)



D E C E M B E R 08, 1 9 8 2 (P= 13.42, B_o=-0.01, L_o= 195.49)

Sp Sp Sp

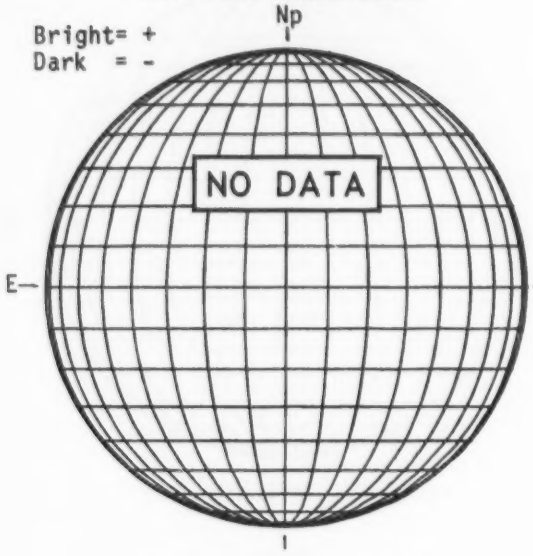
D E C E M B E R 08, 1 9 8 2 (P= 13.42, B_0=-0.01, L_0= 195.49)



D E C E M B E R 09, 1 9 8 2 (P= 13.00, B_0=-0.13, L_0= 182.32)

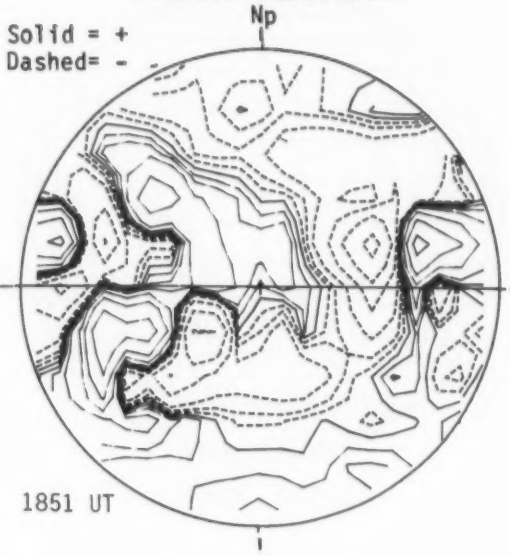
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



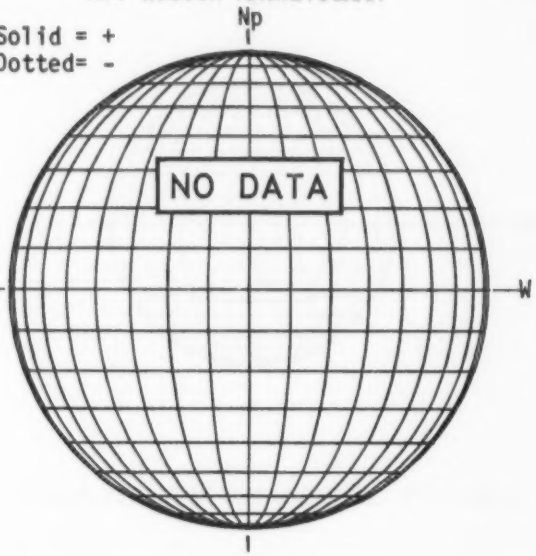
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

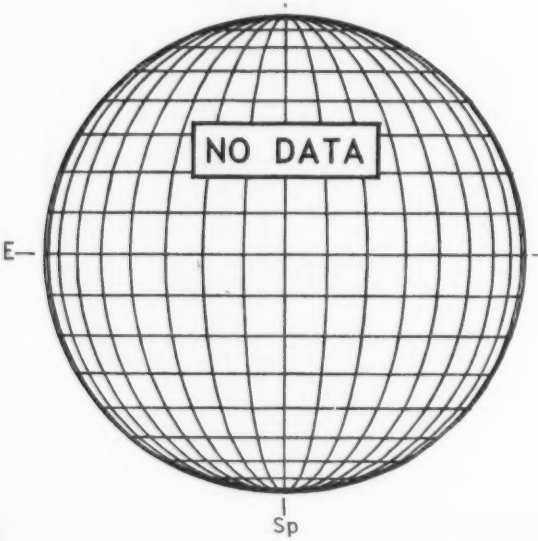


MT. WILSON MAGNETOGRAM

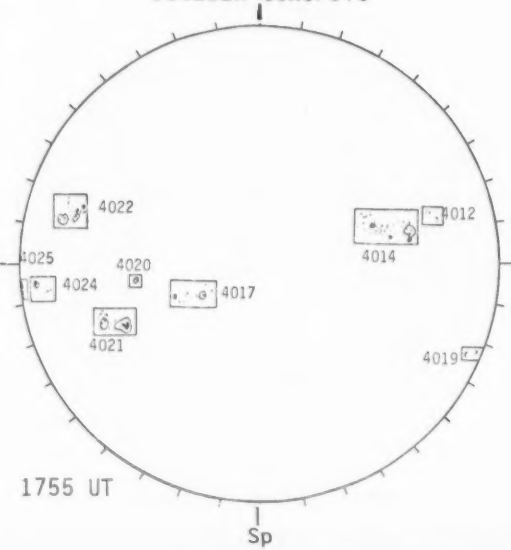
Solid = +
Dotted= -



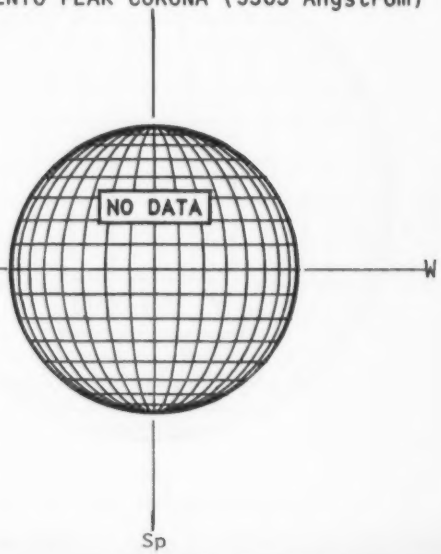
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)

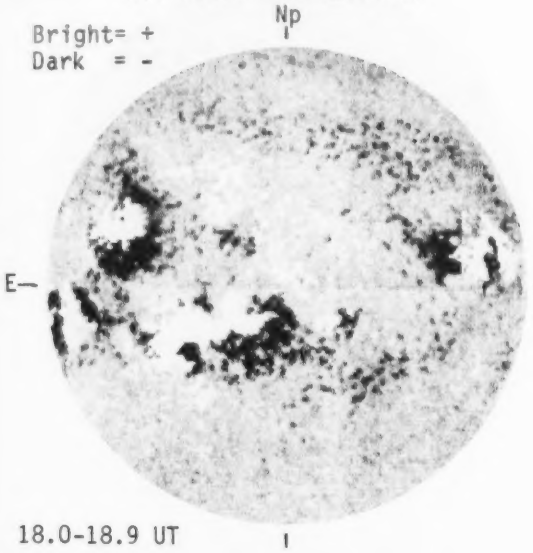


D E C E M B E R 10, 1 9 8 2 (P= 12.57, B_0=-0.26, L_0= 169.14)

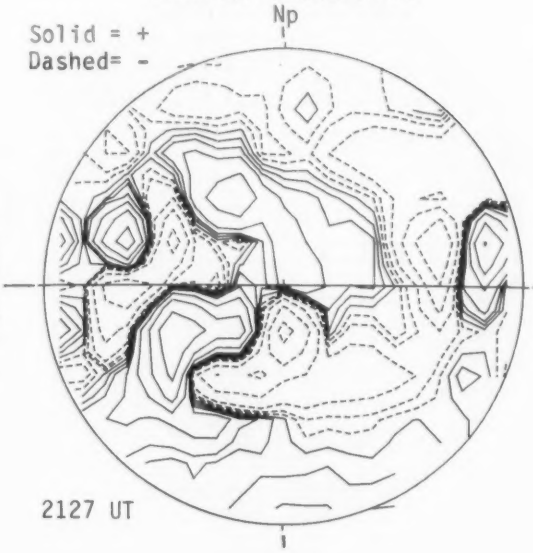
Sp Sp Sp

D E C E M B E R 10, 1 9 8 2 (P= 12.57, B_o=-0.26, L_o= 169.14)

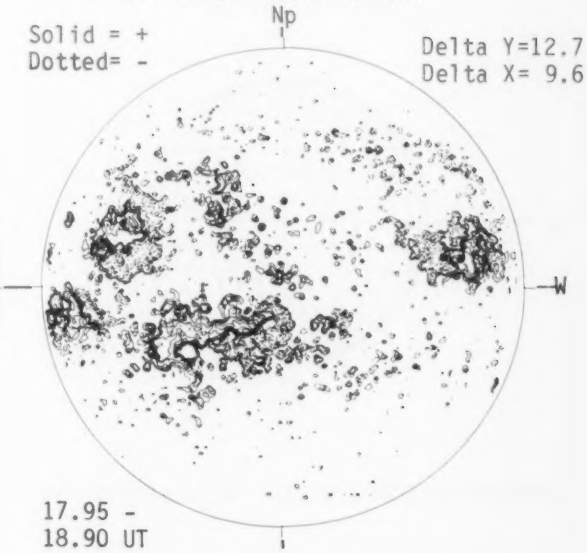
MT. WILSON MAGNETOGRAM



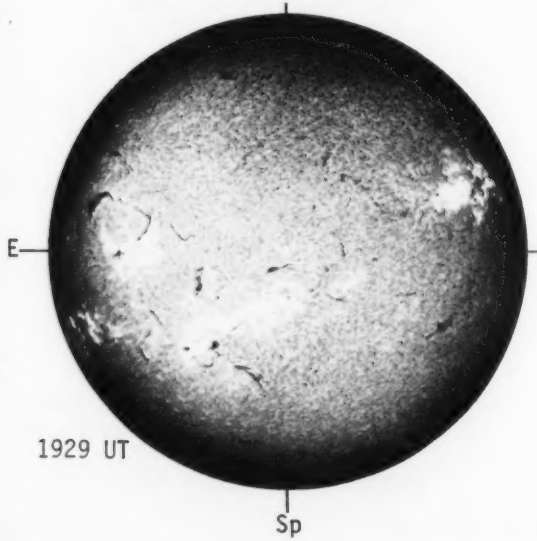
STANFORD MAGNETOGRAM



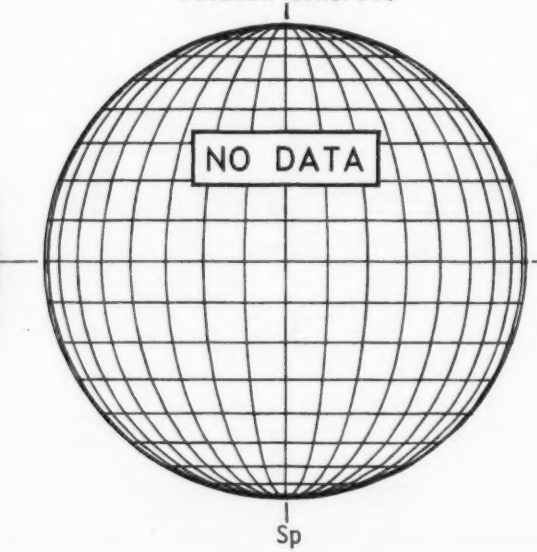
MT. WILSON MAGNETOGRAM



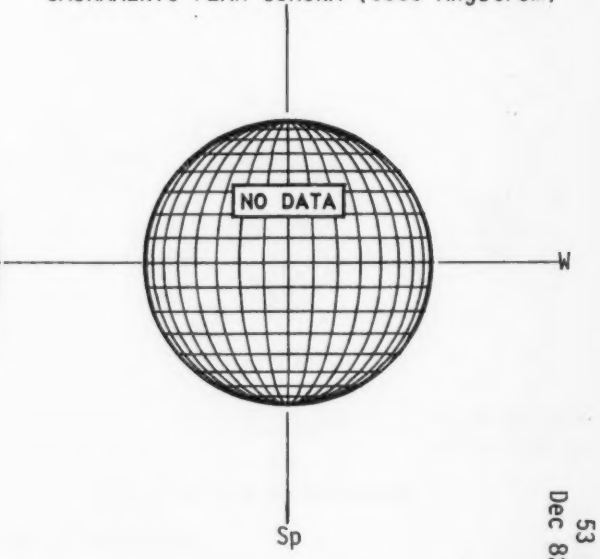
SAN FERNANDO H-ALPHA



BOULDER SUNSPOTS



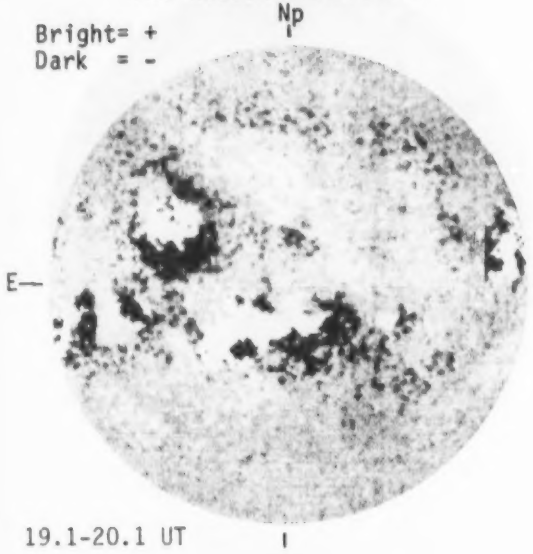
SACRAMENTO PEAK CORONA (5303 Angstrom)



D E C E M B E R 11, 1 9 8 2 (P= 12.14, B_0=-0.39, L_0= 155.96)

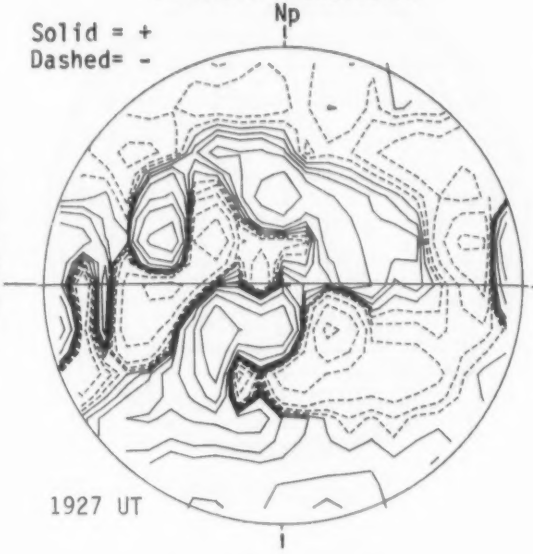
MT. WILSON MAGNETOGRAM

Bright= +
Dark = -



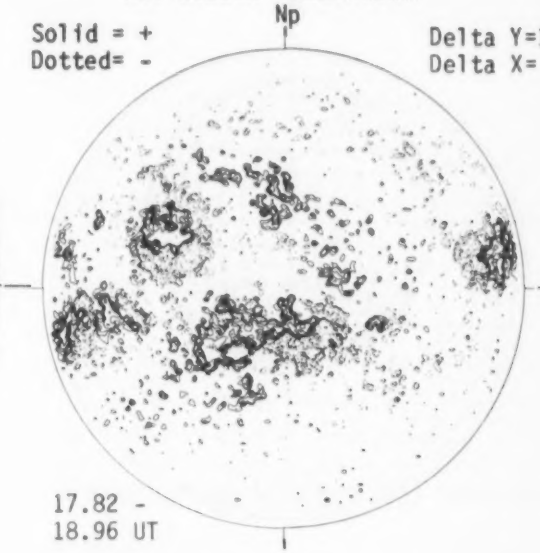
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

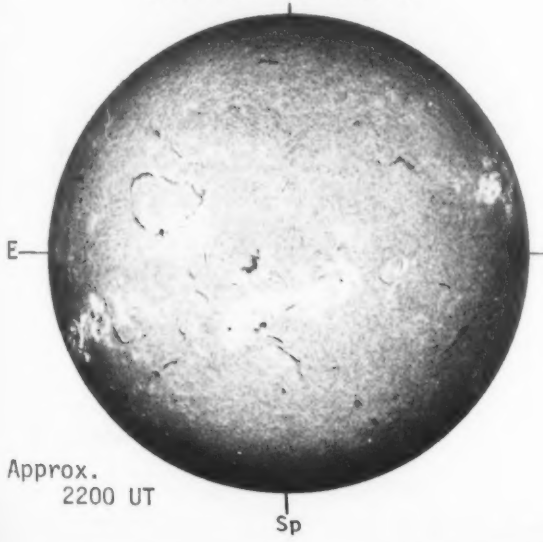


MT. WILSON MAGNETOGRAM

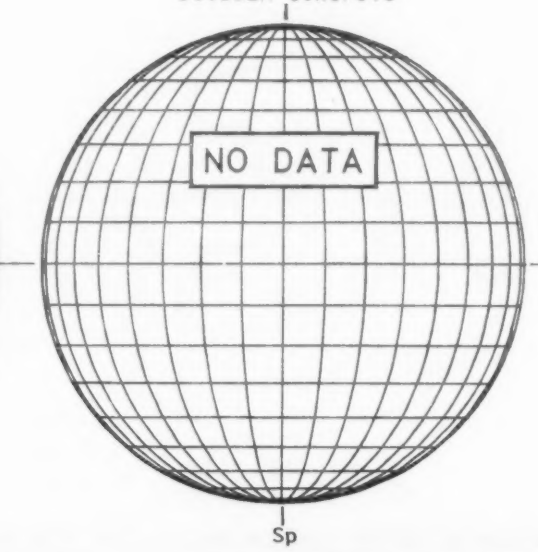
Solid = +
Dotted= -
Delta Y=12.7
Delta X= 9.6



SAN FERNANDO H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)

D E C E M B E R 12, 1 9 8 2 (P= 11.70, B_0=-0.52, L_0= 142.79)

Approx.
2200 UT

Sp

Sp

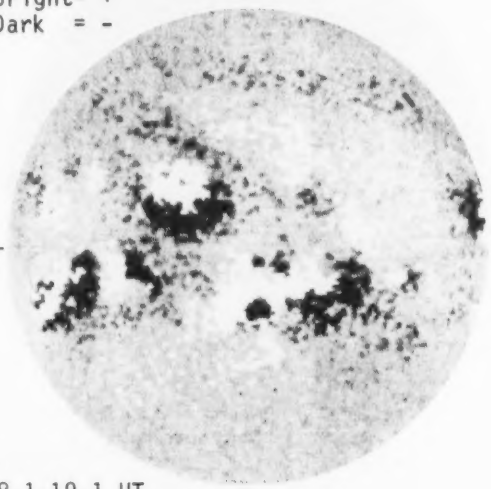
Sp

D E C E M B E R 12, 1 9 8 2 (P= 11.70, B_o=-0.52, L_o= 142.79)

MT. WILSON MAGNETOGRAM

Np

Bright= +
Dark = -



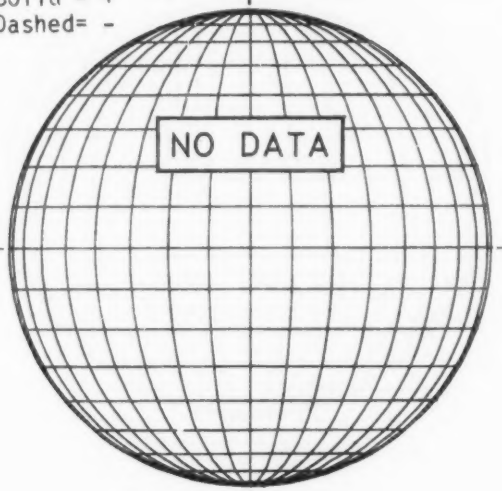
E

18.1-19.1 UT

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed= -

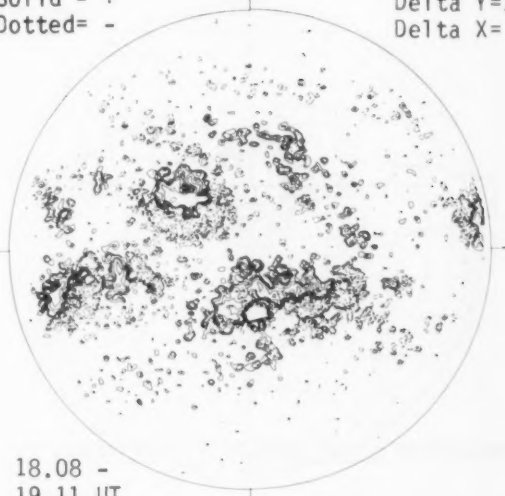


MT. WILSON MAGNETOGRAM

Np

Solid = +
Dotted= -

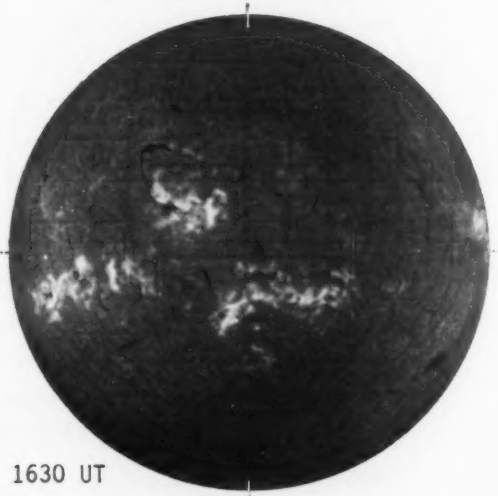
Delta Y=12.7
Delta X= 9.6



W

18.08 -
19.11 UT

BOULDER H-ALPHA

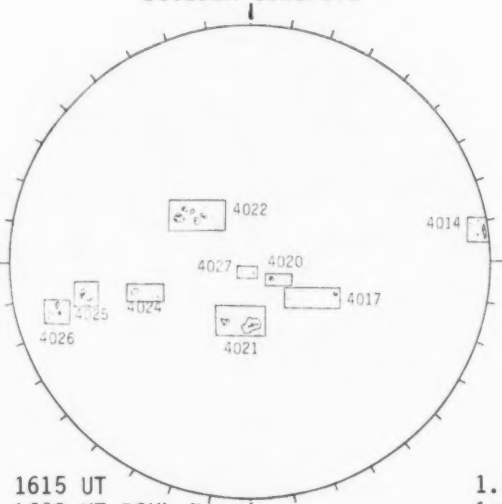


E

1630 UT

Sp

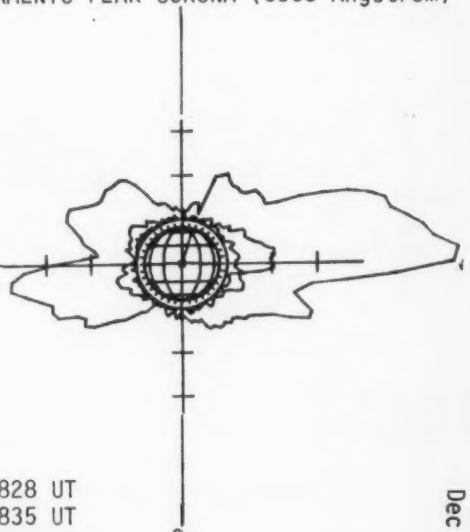
BOULDER SUNSPOTS



1615 UT
1630 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (5303 Angstrom)



1.15 R_o 1828 UT
1.35 R_o 1835 UT
1.55 R_o 1841 UT

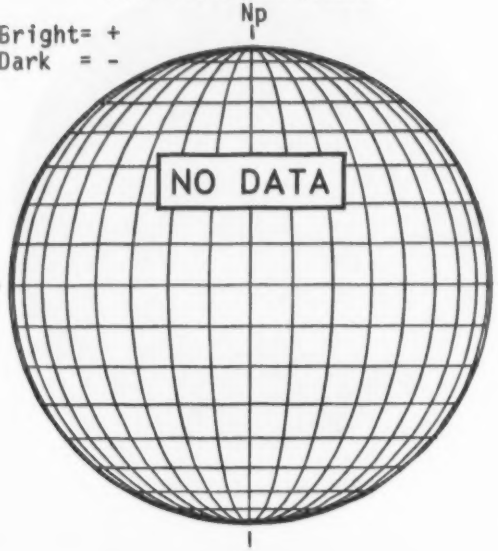
Sp

55
Dec 82

D E C E M B E R 13, 1 9 8 2 (P= 11.25, B_0=-0.65, L_0= 129.61)

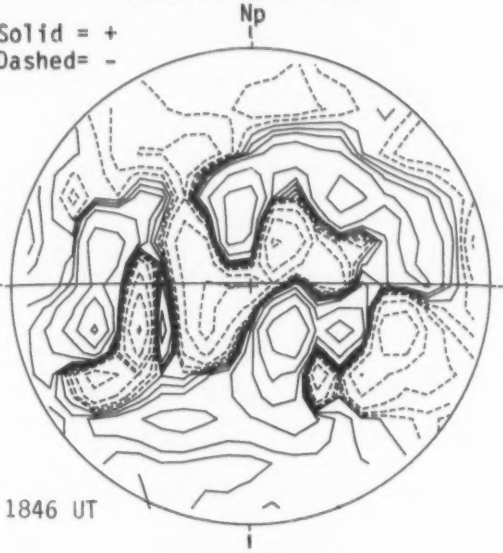
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



STANFORD MAGNETOGRAM

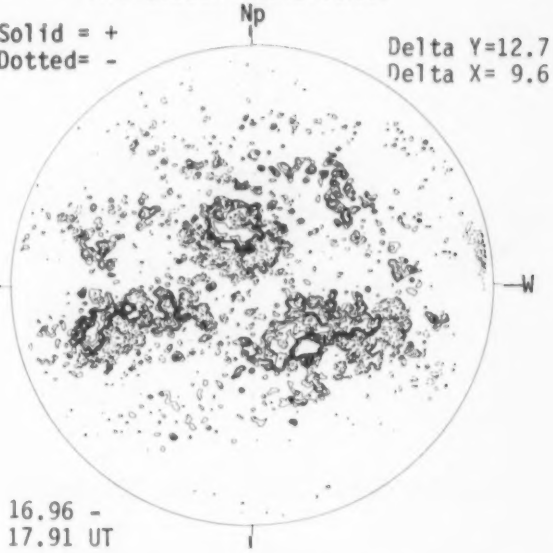
Solid = +
Dashed= -



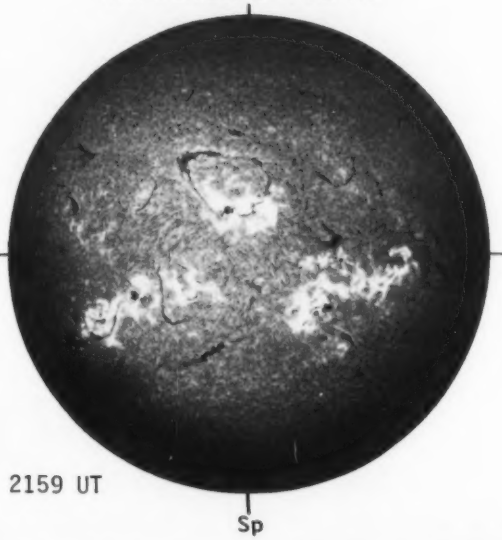
MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -

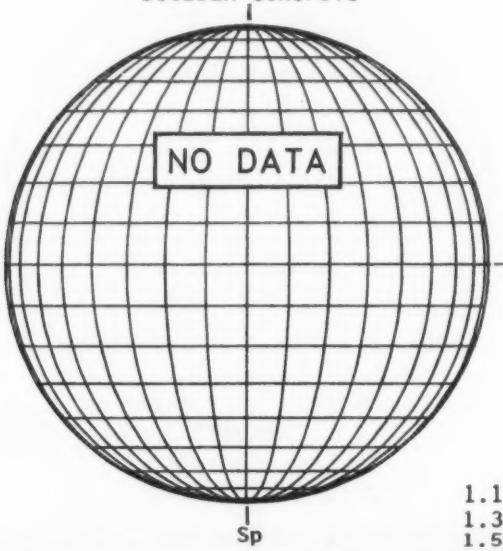
Delta Y=12.7
Delta X= 9.6



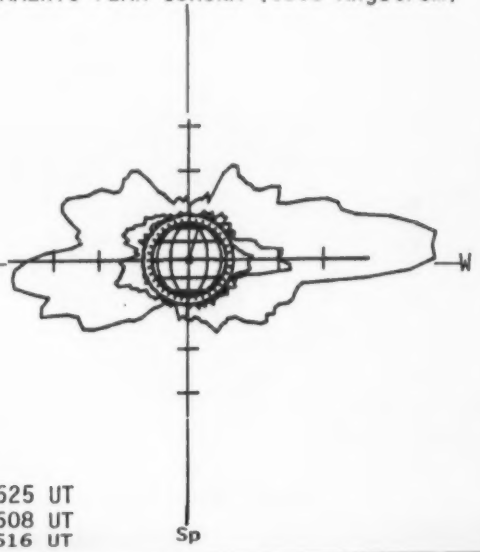
SAN FERNANDO H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)



1.15 R_0 1625 UT
1.35 R_0 1608 UT
1.55 R_0 1616 UT

D E C E M B E R 14, 1 9 8 2 (P= 10.81, B_0=-0.77, L_0= 116.44)

2159 UT

Sp

Sp

1.15 R_o 1625 UT
1.35 R_o 1608 UT
1.55 R_o 1616 UT

Sp

D E C E M B E R 14, 1 9 8 2 (P= 10.81, B_o=-0.77, L_o= 116.44)

KITT PEAK MAGNETOGRAM

Bright= +
Dark = -

Np

E

2308 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed= -

Np

NO DATA

MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -

Np

NO DATA

W

SACRAMENTO PEAK H-ALPHA

E

NO DATA

Sp

BOULDER SUNSPOTS

NO DATA

Sp

SACRAMENTO PEAK CORONA (5303 Angstrom)

W

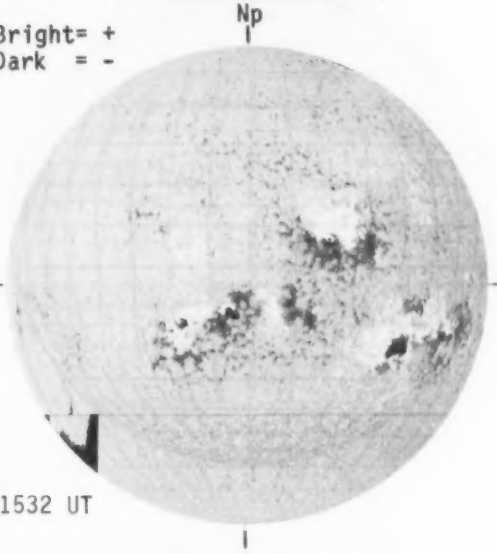
1.15 R_o 1522 UT
1.35 R_o 1539 UT
1.55 R_o 1547 UT

Sp

D E C E M B E R 15, 1 9 8 2 (P= 10.36, B_o=-0.90, L_o= 103.26)

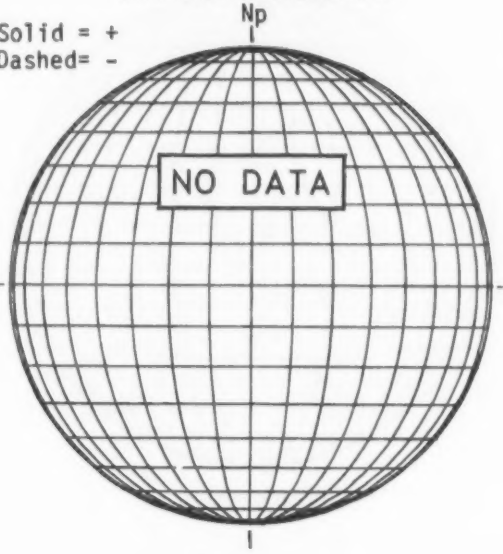
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



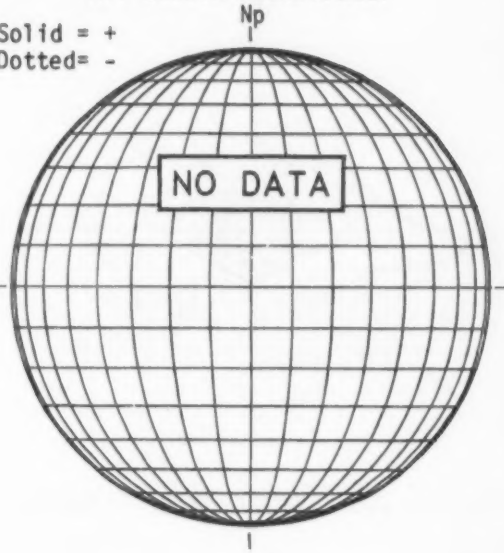
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

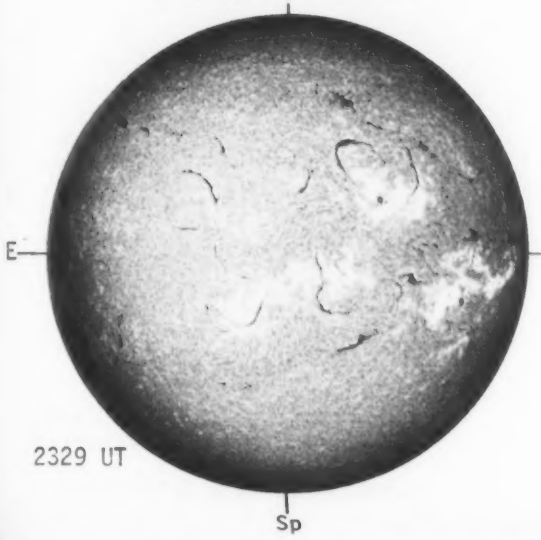


MT. WILSON MAGNETOGRAM

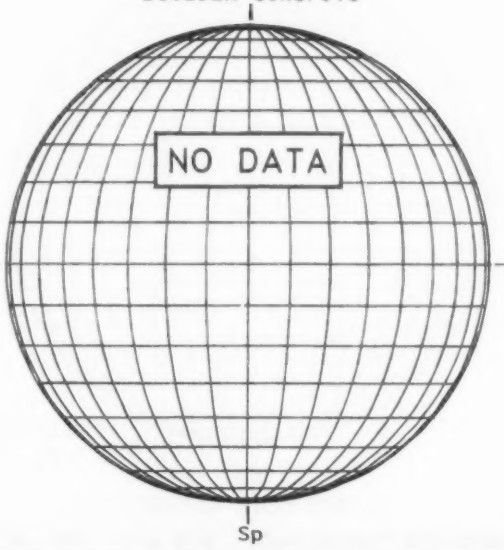
Solid = +
Dotted= -



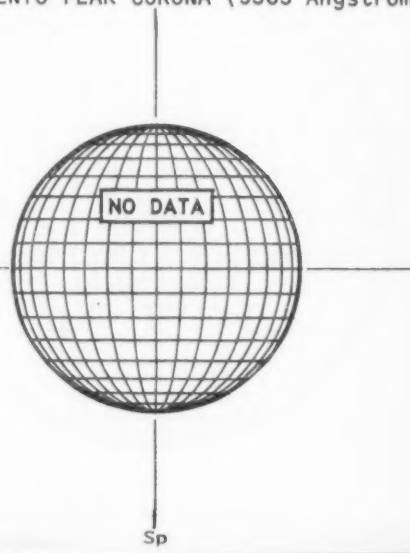
SAN FERNANDO H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)



D E C E M B E R 16, 1 9 8 2 (P= 9.90, B_o=-1.03, L_o= 90.09)

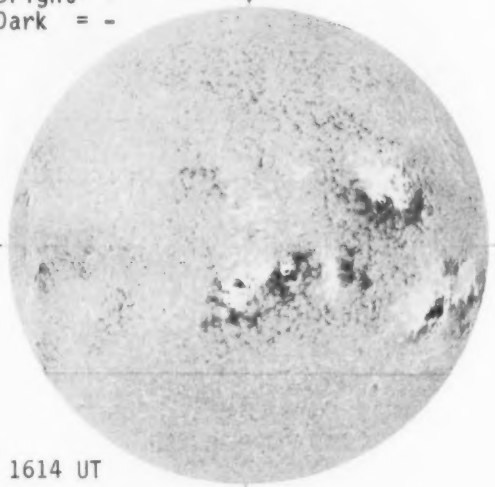
Sp Sp Sp

D E C E M B E R 16, 1 9 8 2 (P= 9.90, B_o=-1.03, L_o= 90.09)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -



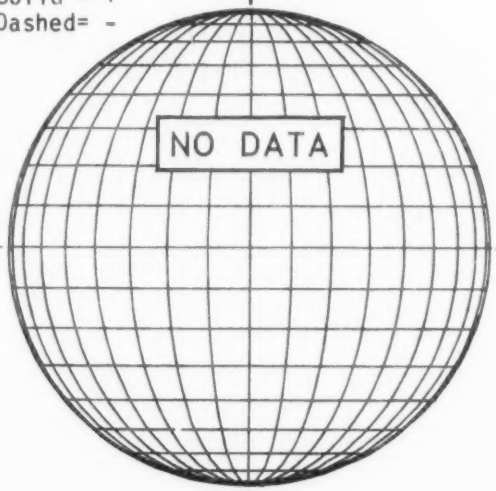
E

1614 UT

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed= -



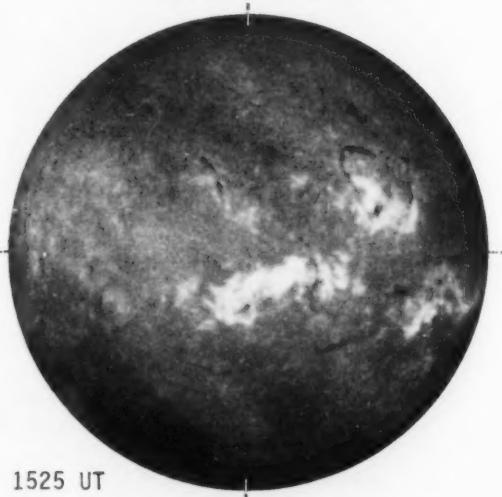
MT. WILSON MAGNETOGRAM

Np

Solid = +
Dotted= -

W

BOULDER H-ALPHA

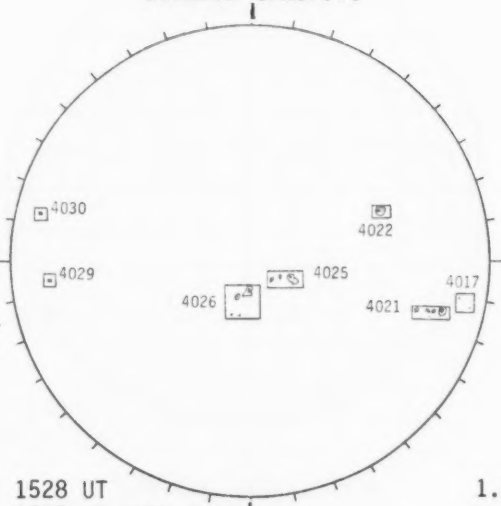


E

1525 UT

Sp

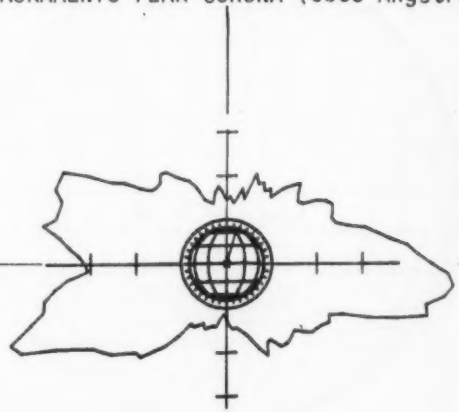
BOULDER SUNSPOTS



1528 UT
1525 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (5303 Angstrom)



W

1.15 R_o 1458 UT

Sp

59
Dec 82

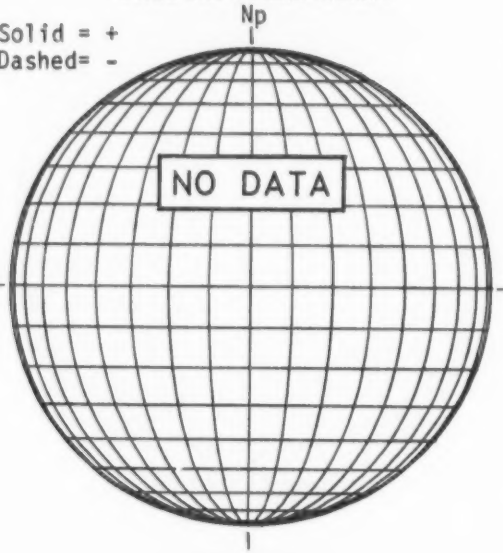
D E C E M B E R 17, 1 9 8 2 (P= 9.45, B_o=-1.16, L_o= 76.91)

KITT PEAK MAGNETOGRAM

Bright= +
Dark = -

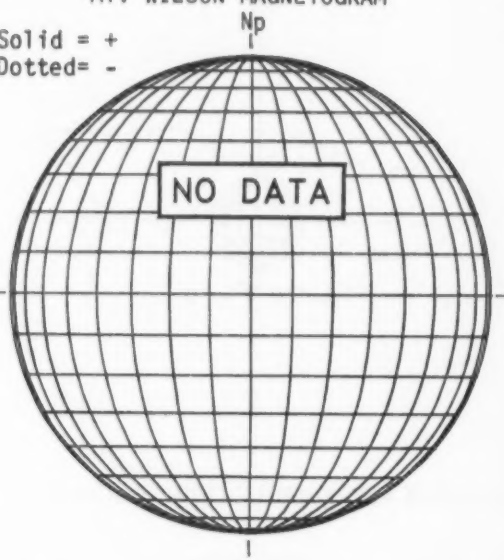
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

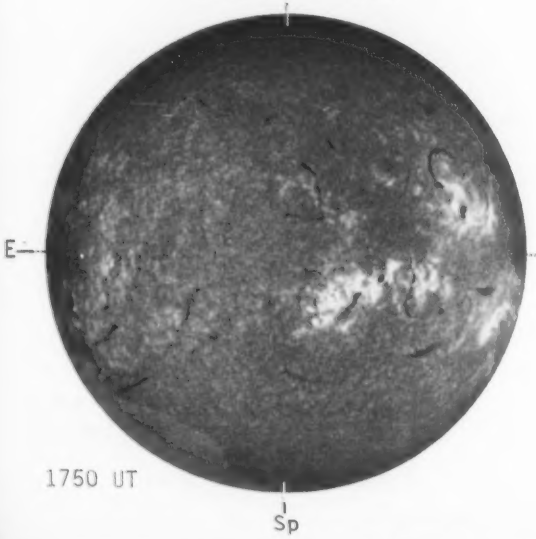


MT. WILSON MAGNETOGRAM

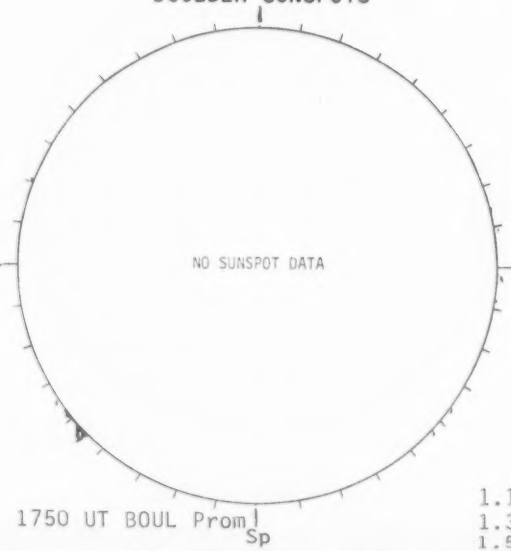
Solid = +
Dotted= -



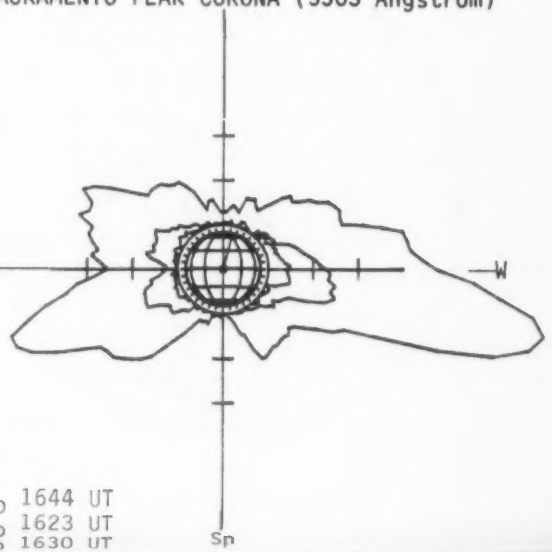
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)



1.15 R_o 1644 UT
1.35 R_o 1623 UT
1.55 R_o 1630 UT

1750 UT

Sp

1750 UT BOUL Prom

Sp

1.15 R_o 1644 UT
1.35 R_o 1623 UT
1.55 R_o 1630 UT

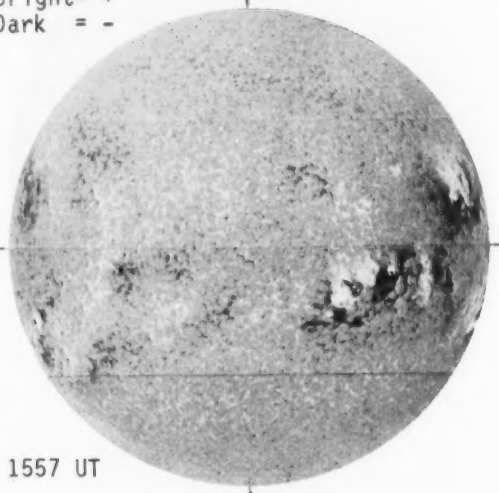
Sp

D E C E M B E R 18, 1 9 8 2 (P= 8.99, B_o=-1.28, L_o= 63.74)

KITT PEAK MAGNETOGRAM

Bright= +
Dark = -

Np



E

1557 UT

Sp

STANFORD MAGNETOGRAM

Solid = +
Dashed= -

Np

NO DATA

MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -

Np

NO DATA

W

SACRAMENTO PEAK H-ALPHA

NO DATA

E

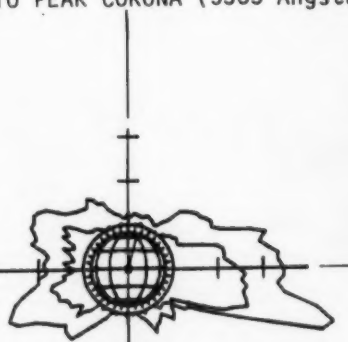
Sp

BOULDER SUNSPOTS

NO DATA

Sp

SACRAMENTO PEAK CORONA (5303 Angstrom)



W

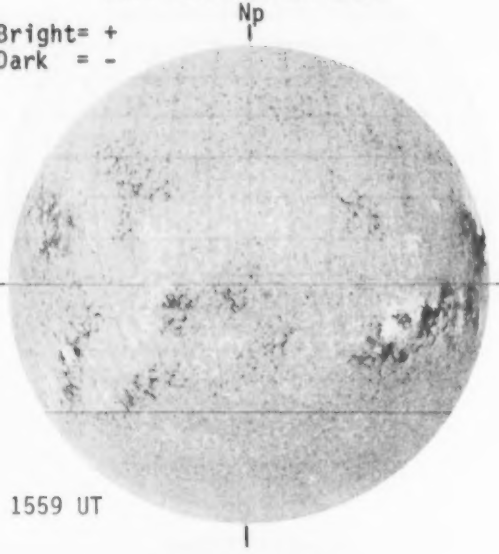
1.15 R_o 1957 UT
1.35 R_o 2004 UT

Sp

D E C E M B E R 19, 1 9 8 2 (P= 8.52, B_0=-1.41, L_0= 50.57)

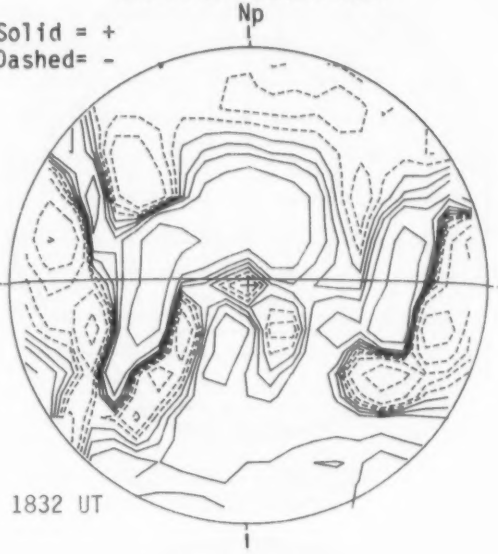
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



STANFORD MAGNETOGRAM

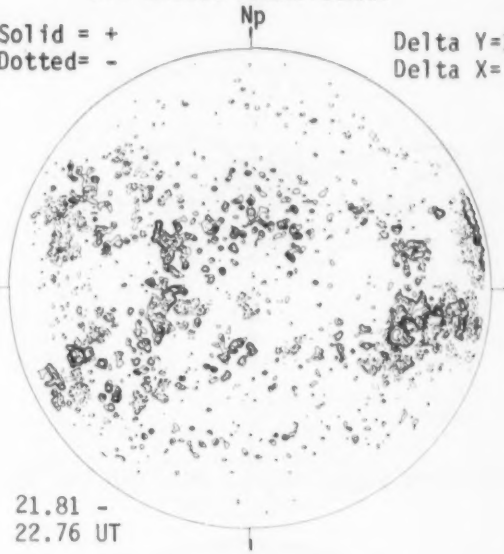
Solid = +
Dashed= -



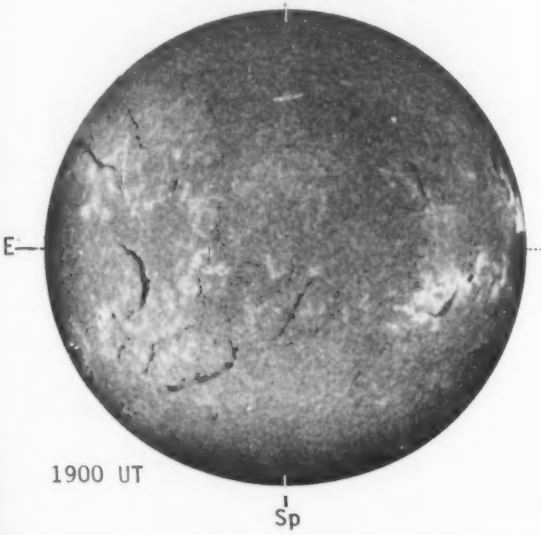
MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -

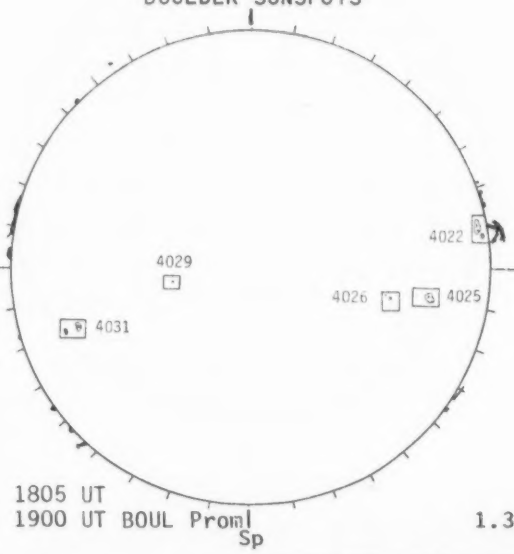
Delta Y=12.7
Delta X= 9.6



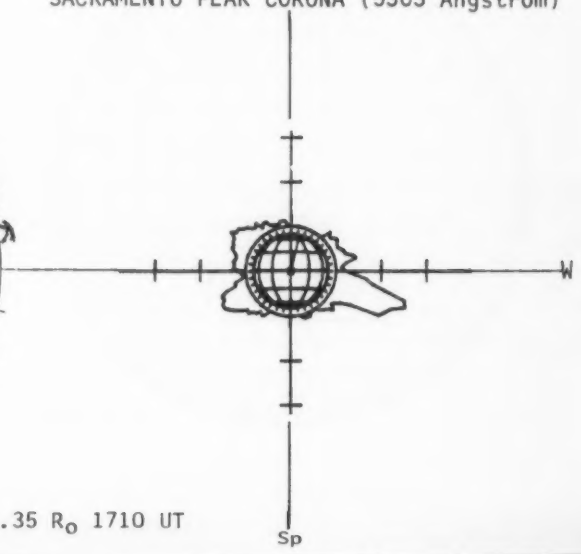
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)



D E C E M B E R 20, 1 9 8 2 (P= 8.05, B_0=-1.53, L_0= 37.39)

1900 UT BOUL Prom

1.35 R_o 1710 UT

Sp

Sp

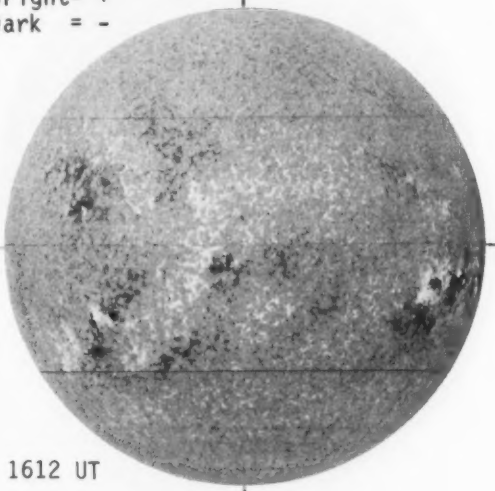
Sp

D E C E M B E R 20, 1 9 8 2 (P= 8.05, B_o=-1.53, L_o= 37.39)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -



E

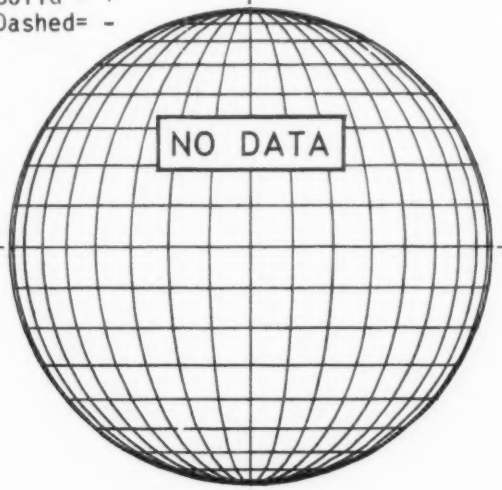
1612 UT

Sp

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed= -



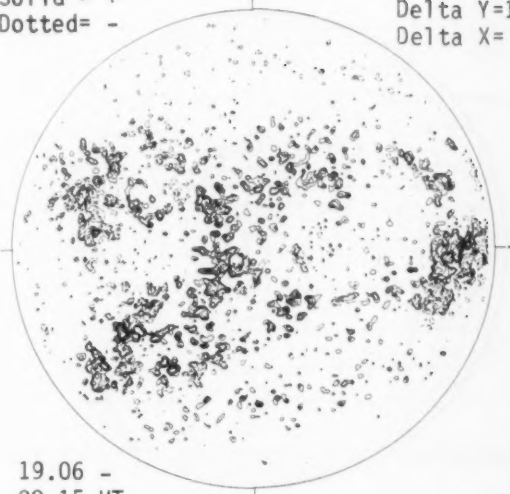
Sp

MT. WILSON MAGNETOGRAM

Np

Solid = +
Dotted= -

Delta Y=12.7
Delta X= 9.6

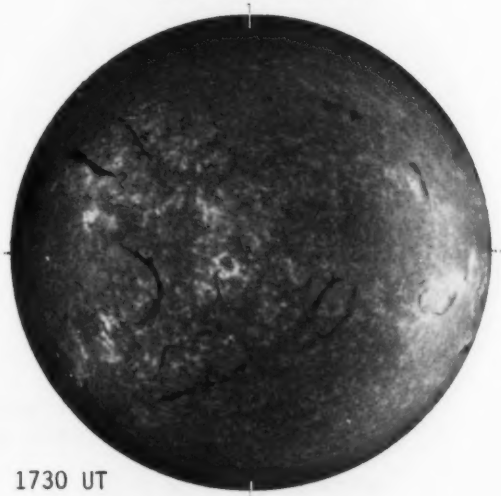


W

19.06 -
20.15 UT

Sp

BOULDER H-ALPHA

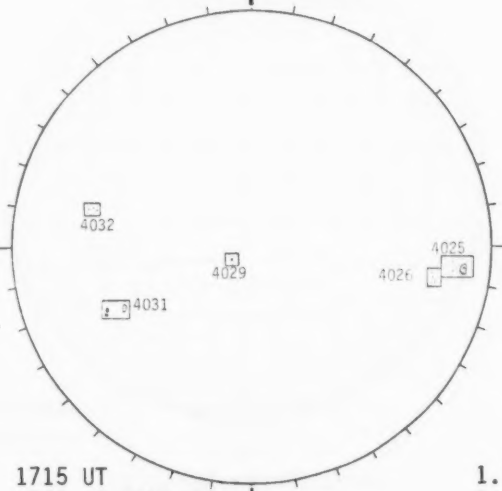


E

1730 UT

Sp

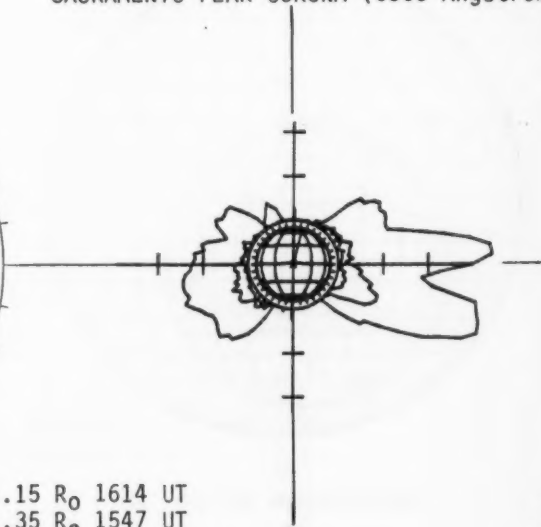
BOULDER SUNSPOTS



1715 UT
1730 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (5303 Angstrom)



W

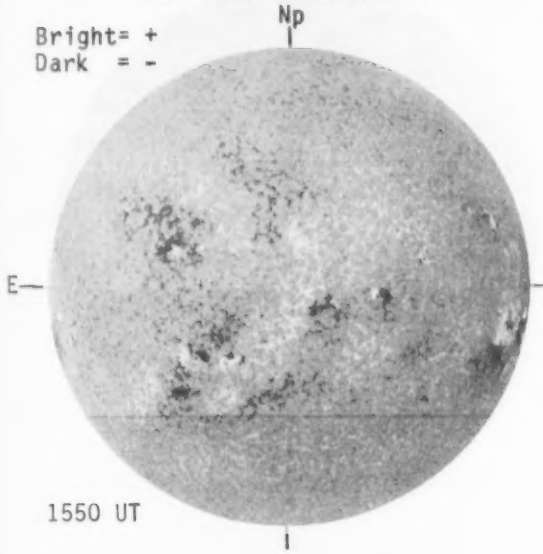
1.15 R_o 1614 UT
1.35 R_o 1547 UT
1.55 R_o 1554 UT

Sp

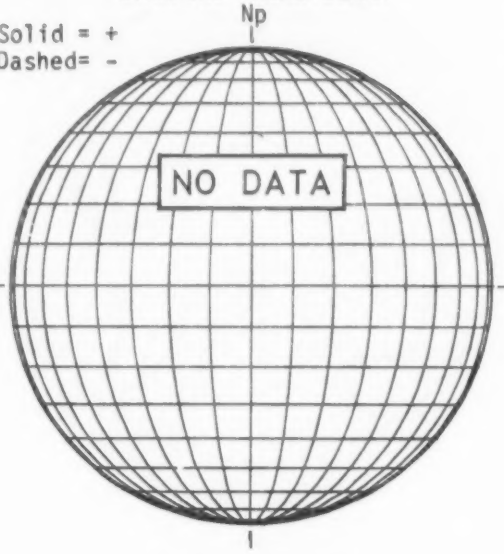
63
Dec 82

D E C E M B E R 21, 1 9 8 2 (P= 7.59, B_o=-1.66, L_o= 24.22)

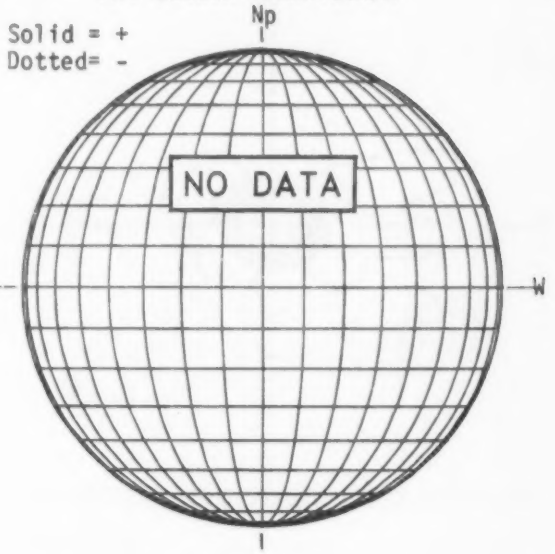
KITT PEAK MAGNETOGRAM



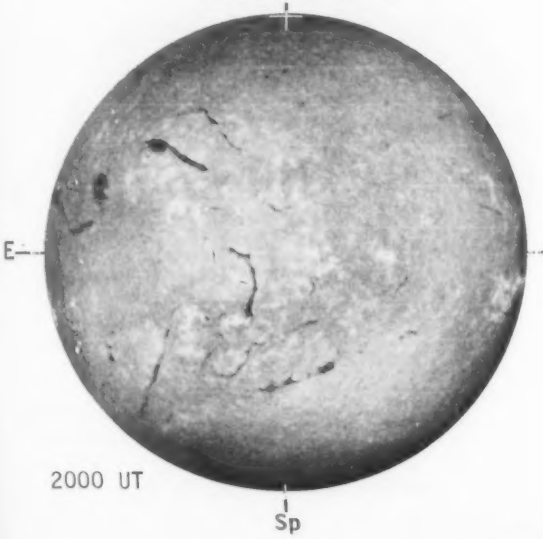
STANFORD MAGNETOGRAM



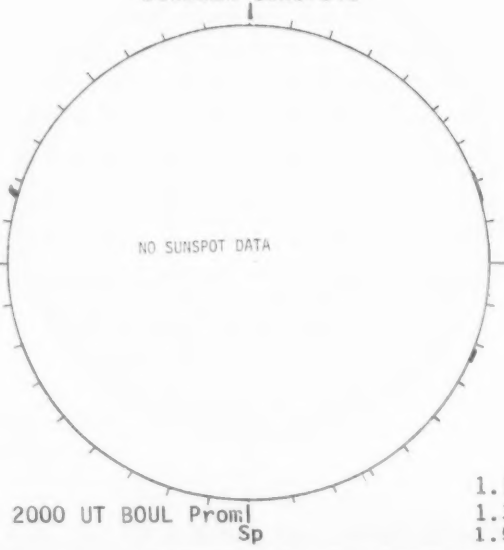
MT. WILSON MAGNETOGRAM



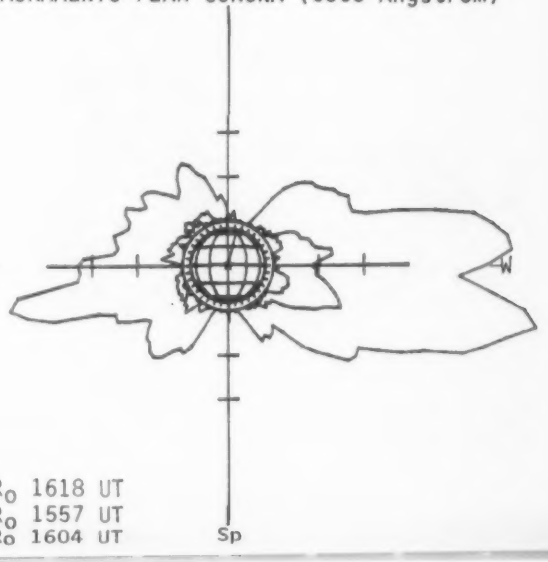
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)



1.15 R_o 1618 UT
1.35 R_o 1557 UT
1.55 R_o 1604 UT

D E C E M B E R 22, 1 9 8 2 (P= 7.11, B_o=-1.78, L_o= 11.05)

2000 UT

Sp

2000 UT BOUL Prom

Sp

1.15 R_O 1618 UT
1.35 R_O 1557 UT
1.55 R_O 1604 UT

Sp

D E C E M B E R 22, 1 9 8 2 (P= 7.11, B_O=-1.78, L_O= 11.05)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -

NO DATA

E

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed= -

NO DATA

MT. WILSON MAGNETOGRAM

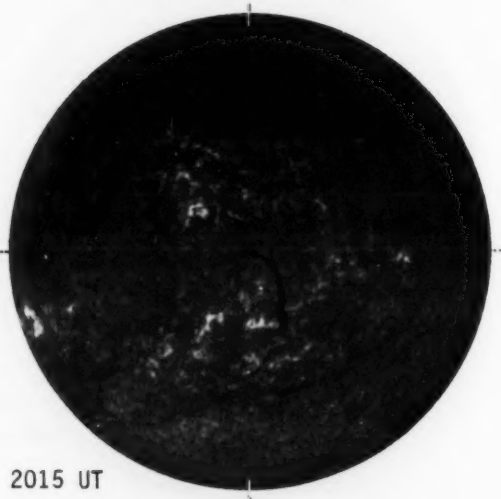
Np

Solid = +
Dotted= -

NO DATA

W

BOULDER H-ALPHA



E

2015 UT

Sp

BOULDER SUNSPOTS

NO SUNSPOT DATA

2015 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (5303 Angstrom)

NO DATA

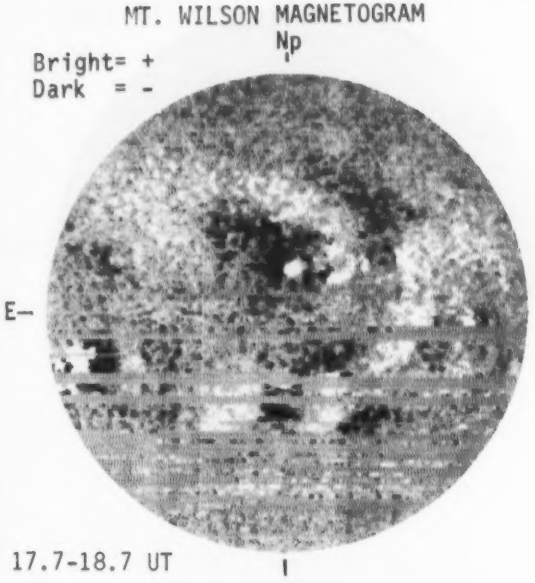
W

Sp

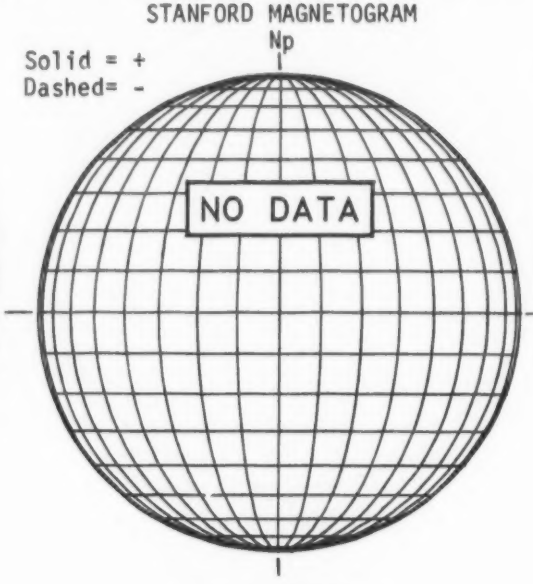
65
Dec 82

D E C E M B E R 23, 1 9 8 2 (P= 6.64, B_o=-1.91, L_o= 357.87)

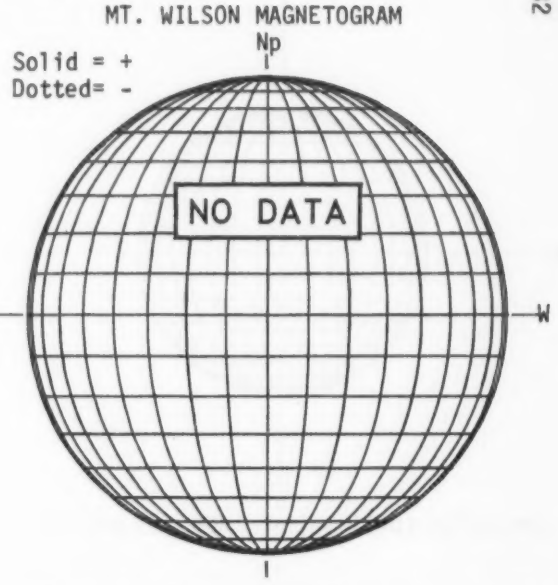
MT. WILSON MAGNETOGRAM



STANFORD MAGNETOGRAM

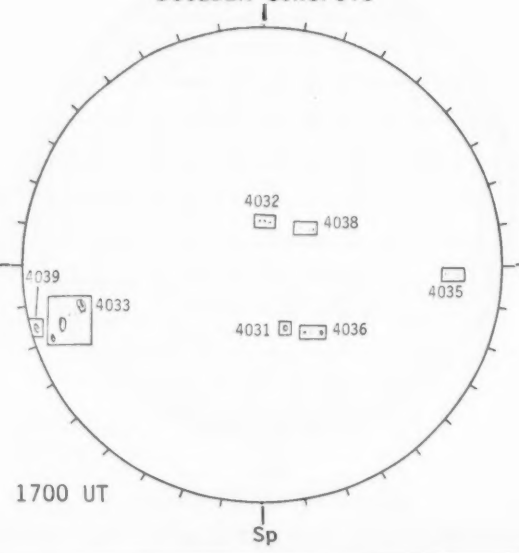


MT. WILSON MAGNETOGRAM

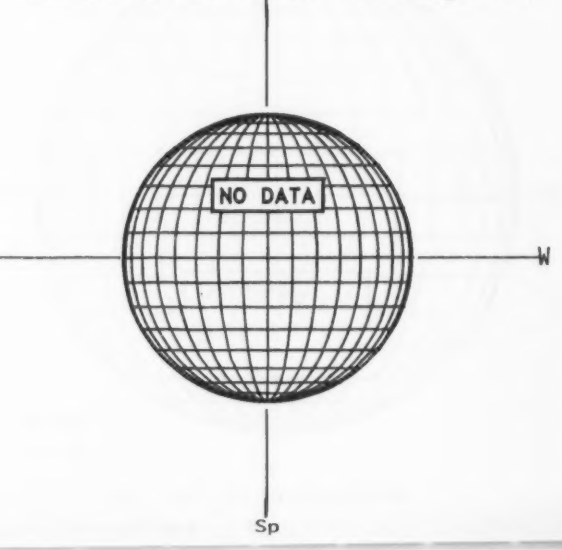


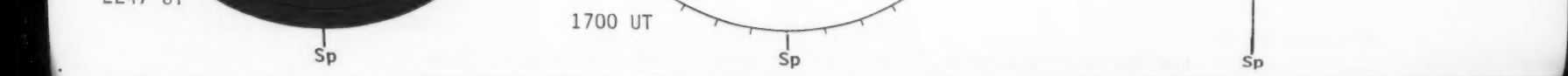
SAN FERNANDO H-ALPHA

BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)

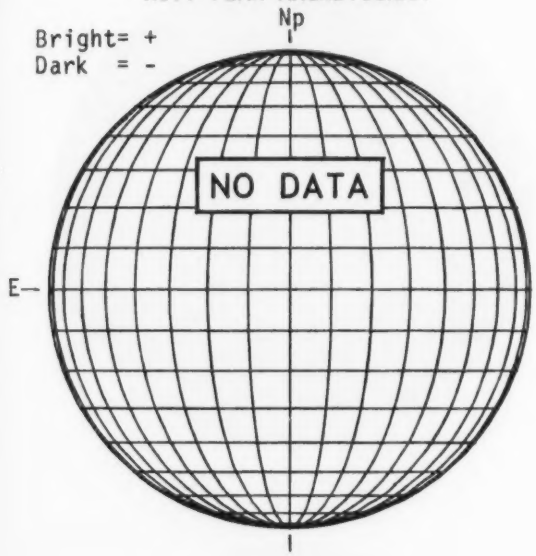




D E C E M B E R 24, 1 9 8 2 (P= 6.16, B_o=-2.03, L_o= 344.70)

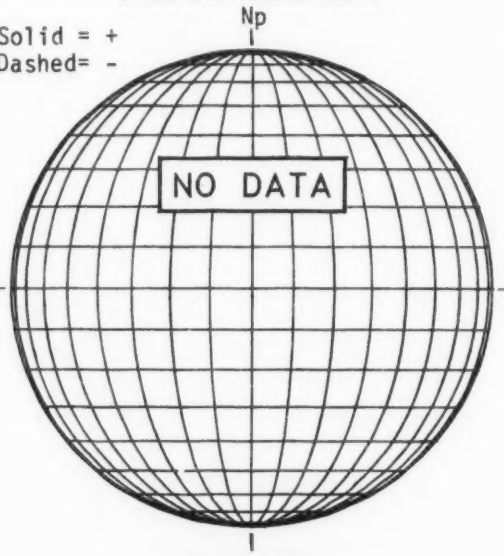
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



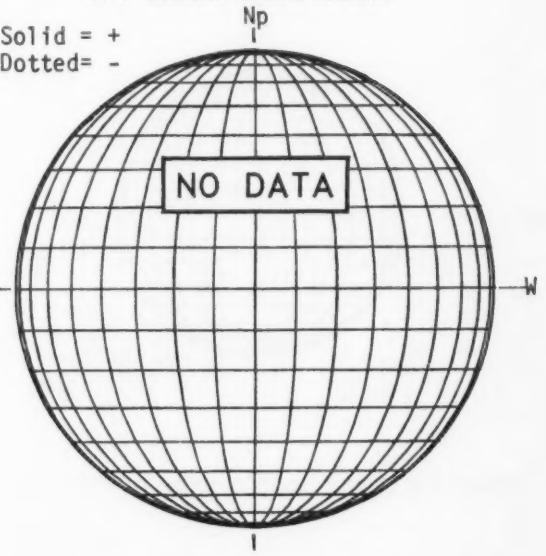
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

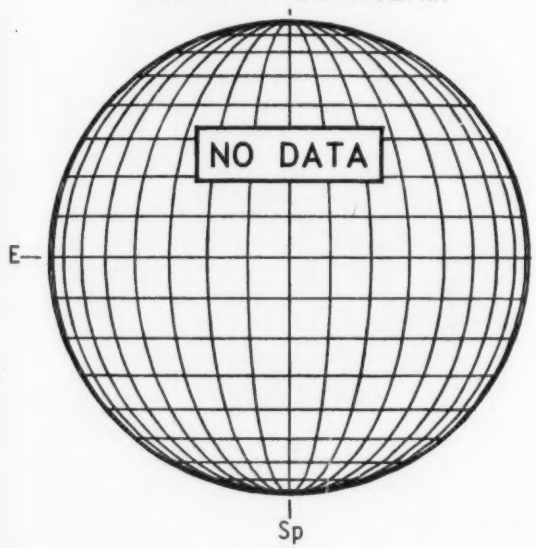


MT. WILSON MAGNETOGRAM

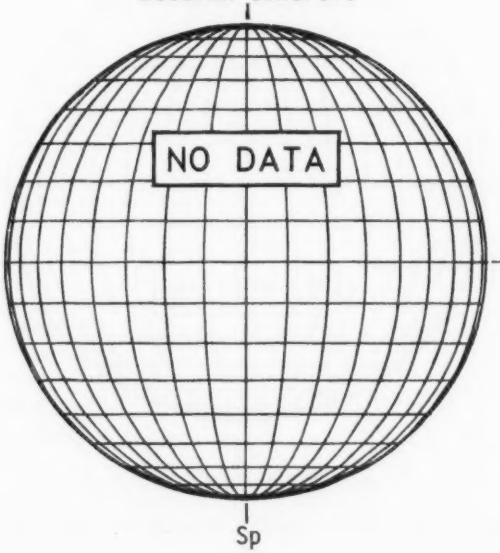
Solid = +
Dotted= -



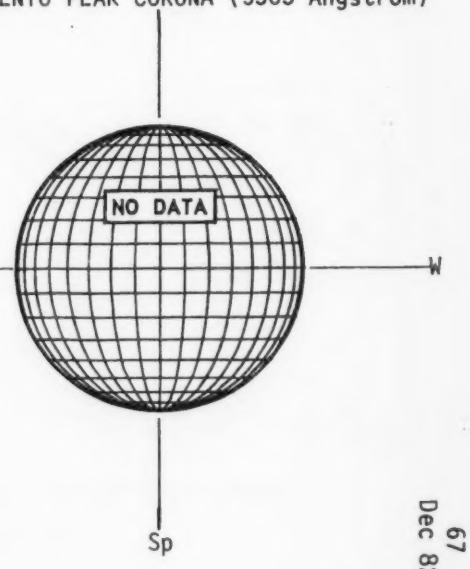
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS

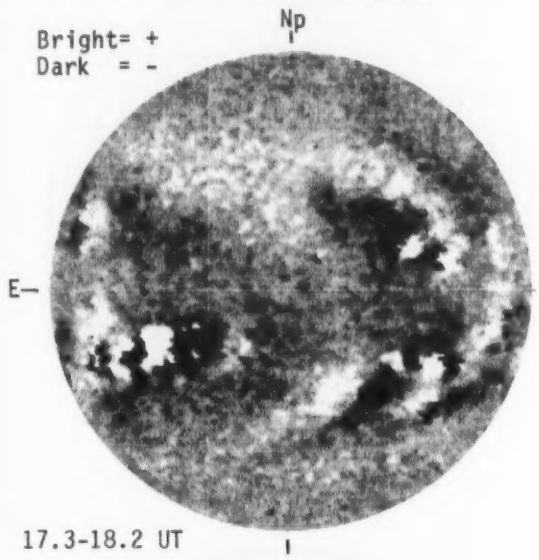


SACRAMENTO PEAK CORONA (5303 Angstrom)

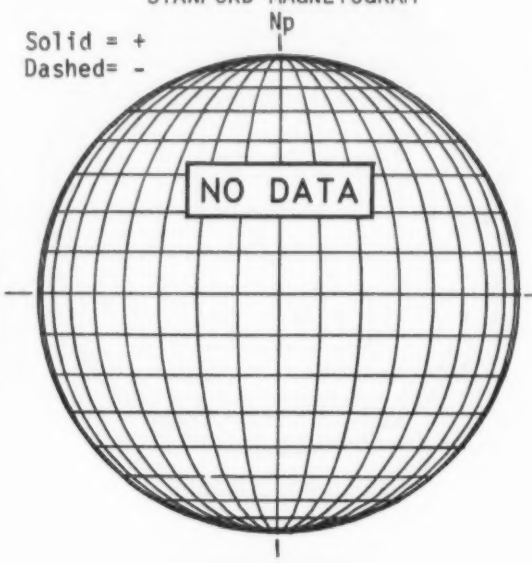


D E C E M B E R 25, 1 9 8 2 (P= 5.68, B_0=-2.16, L_0= 331.53)

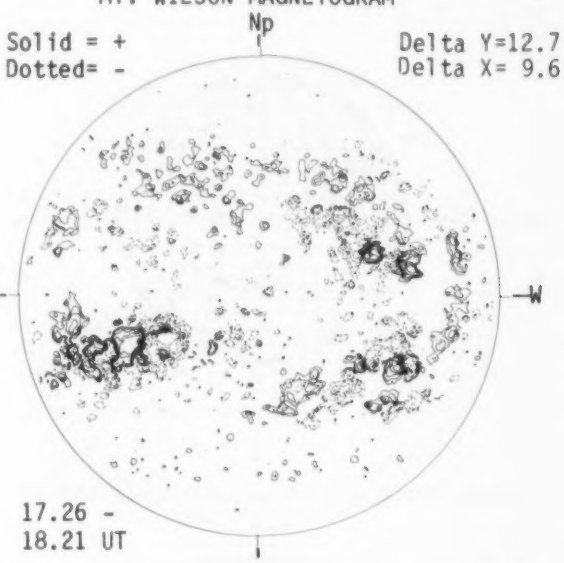
MT. WILSON MAGNETOGRAM



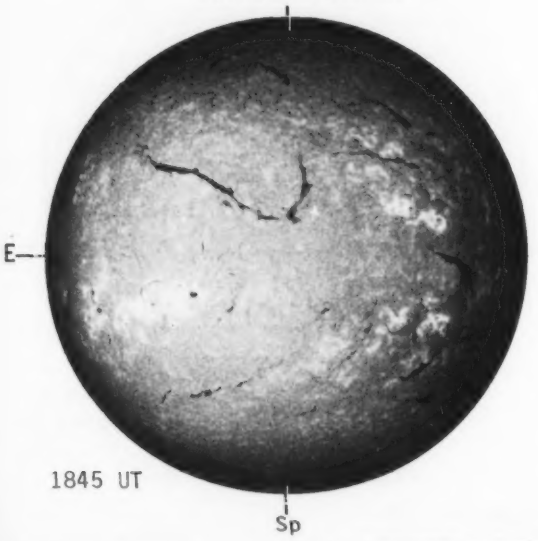
STANFORD MAGNETOGRAM



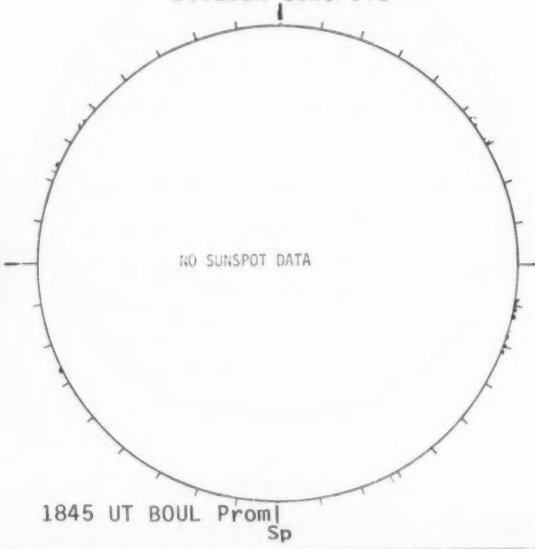
MT. WILSON MAGNETOGRAM



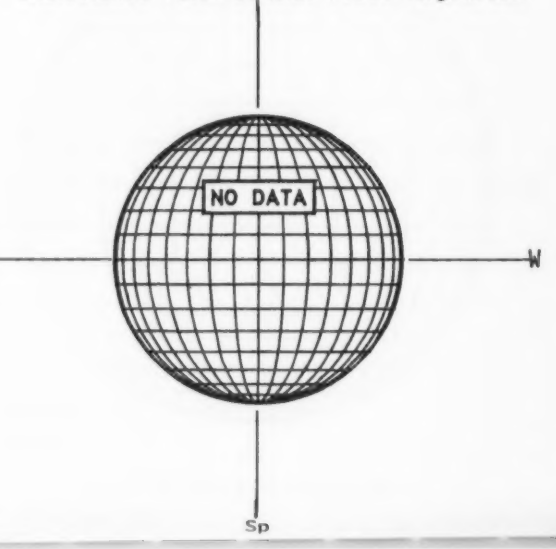
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)



D E C E M B E R 26, 1 9 8 2 (P= 5.21, B_0=-2.28, L_0= 318.36)

1845 UT

Sp

1845 UT BOUL Prom

Sp

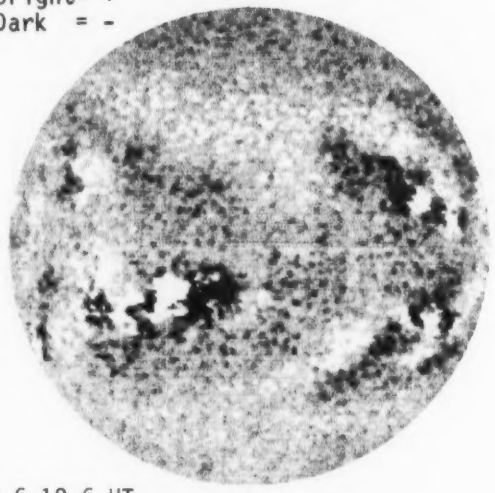
Sp

D E C E M B E R 26, 1 9 8 2 (P= 5.21, B_o=-2.28, L_o= 318.36)

MT. WILSON MAGNETOGRAM

Np

Bright= +
Dark = -



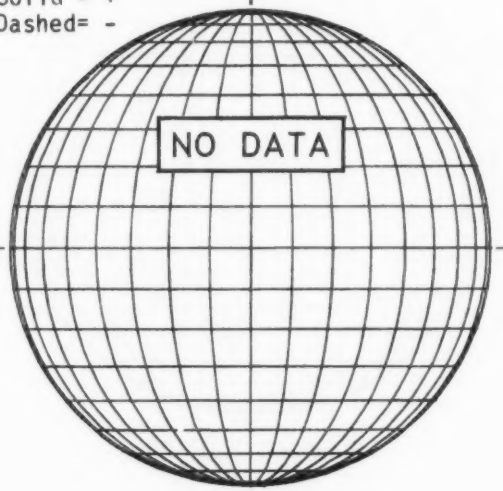
E—

18.6-19.6 UT

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed= -

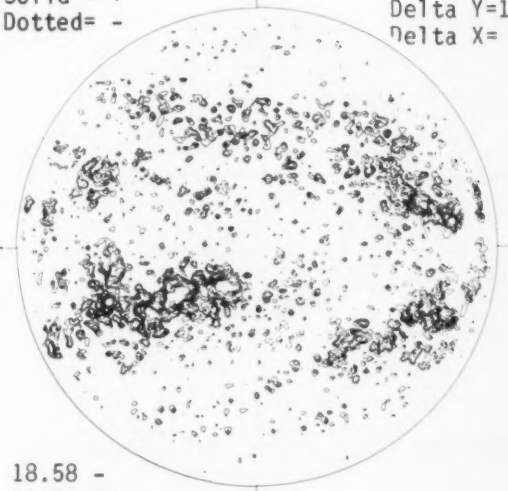


MT. WILSON MAGNETOGRAM

Np

Solid = +
Dotted= -

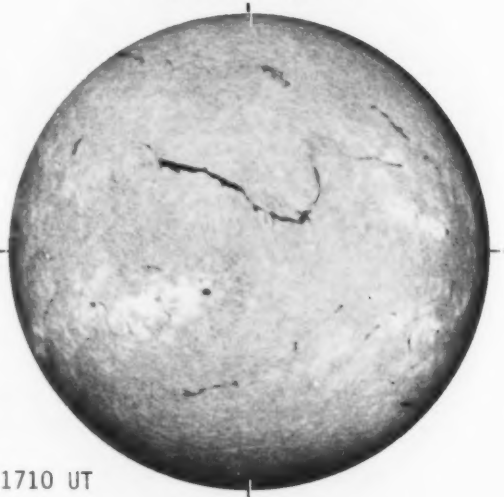
Delta Y=12.7
Delta X= 9.6



—W

18.58 -
19.56 UT

BOULDER H-ALPHA

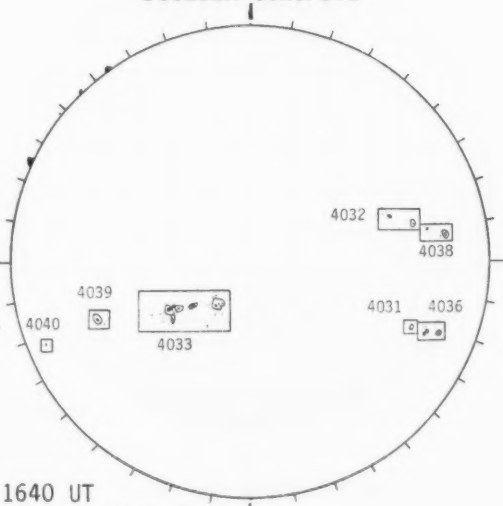


E—

1710 UT

Sp

BOULDER SUNSPOTS



1640 UT
1710 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (5303 Angstrom)

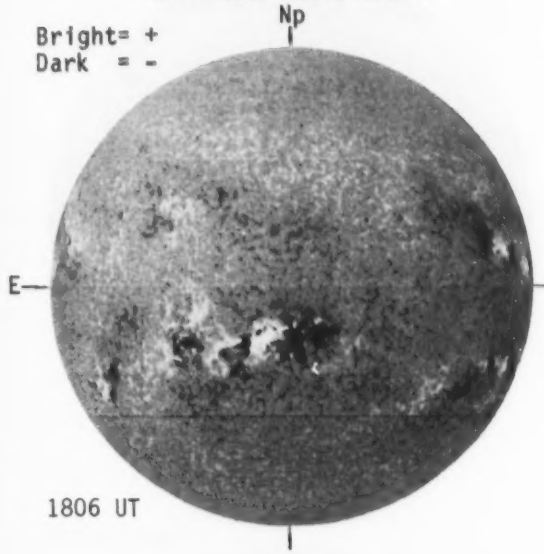
—W

Sp

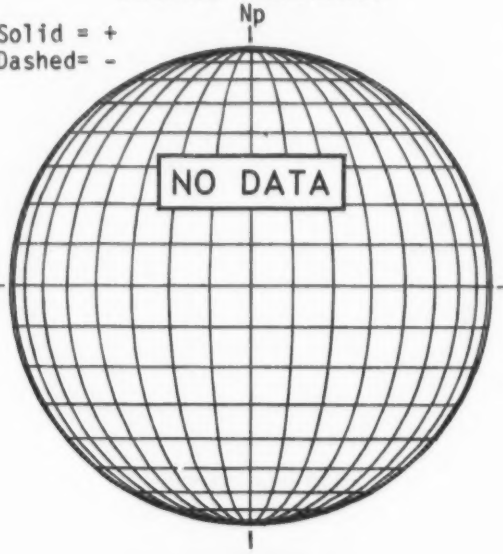
69
Dec 82

D E C E M B E R 27, 1 9 8 2 (P= 4.72, B_0=-2.40, L_0= 305.18)

KITT PEAK MAGNETOGRAM

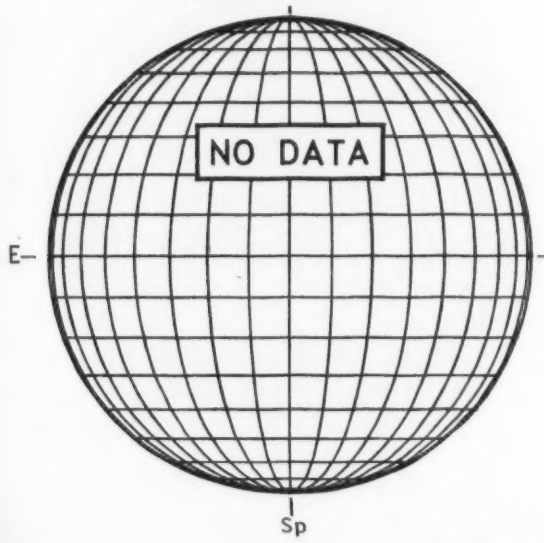


STANFORD MAGNETOGRAM

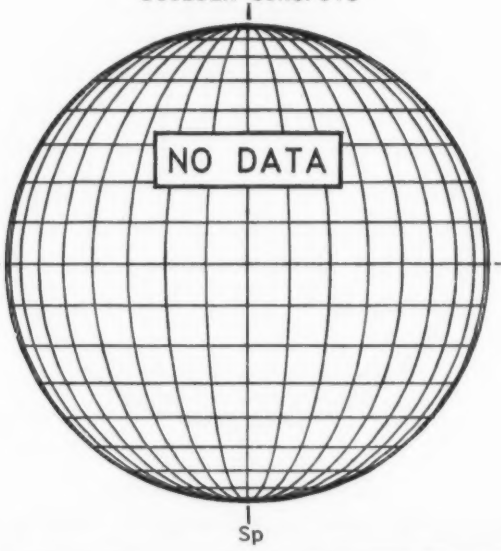


MT. WILSON MAGNETOGRAM

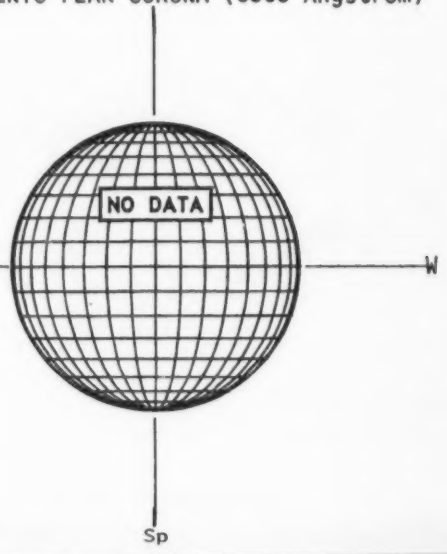
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)

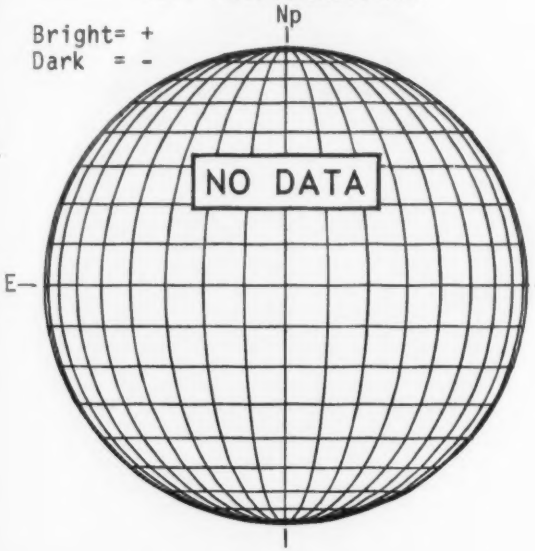


Sp Sp Sp

D E C E M B E R 28, 1 9 8 2 (P= 4.24, B_o=-2.52, L_o= 292.01)

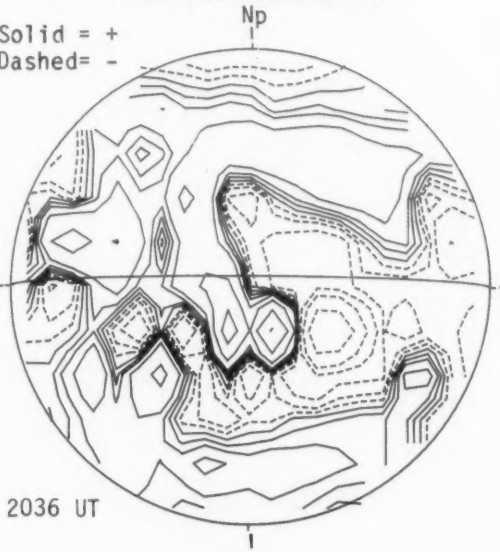
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



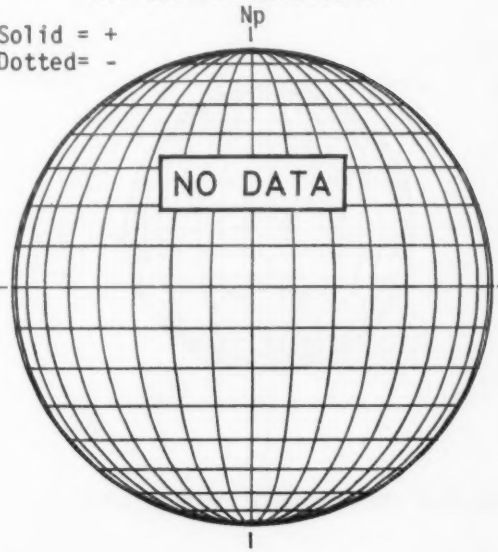
STANFORD MAGNETOGRAM

Solid = +
Dashed= -



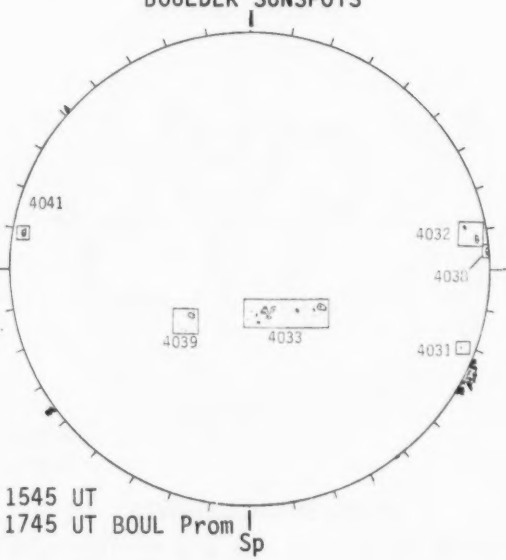
MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -



BOULDER H-ALPHA

BOULDER SUNSPOTS

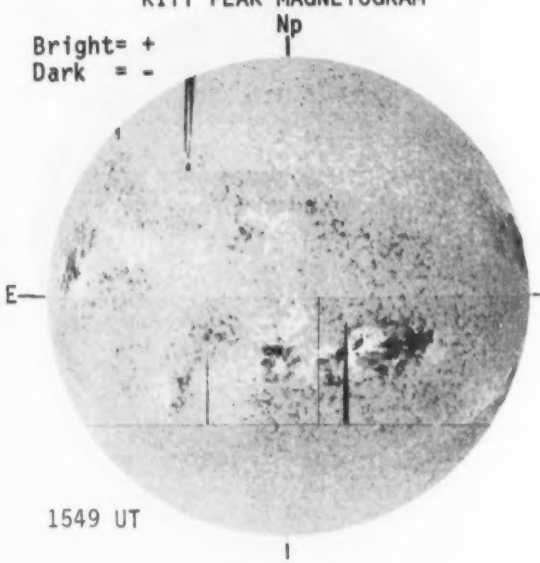


SACRAMENTO PEAK CORONA (5303 Angstrom)

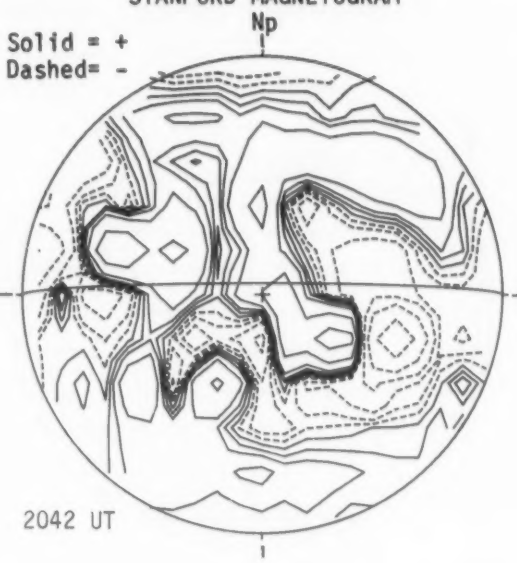
71
Dec 82

DECEMBER 29, 1982 (P= 3.76, B_o=-2.64, L_o= 278.84)

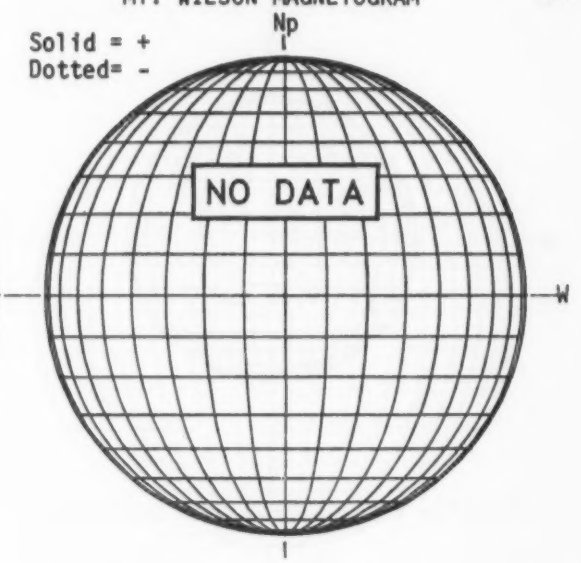
KITT PEAK MAGNETOGRAM



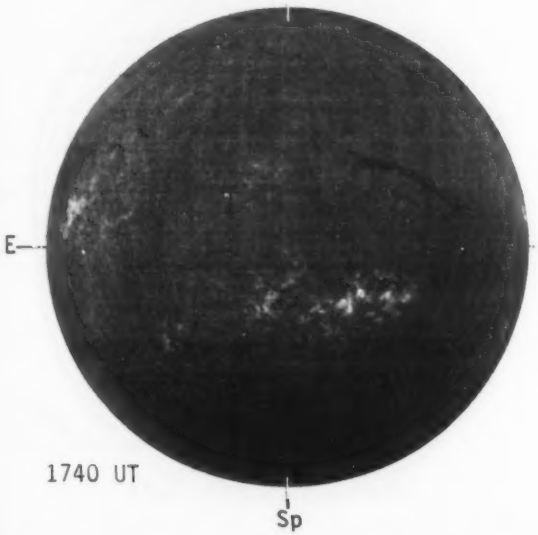
STANFORD MAGNETOGRAM



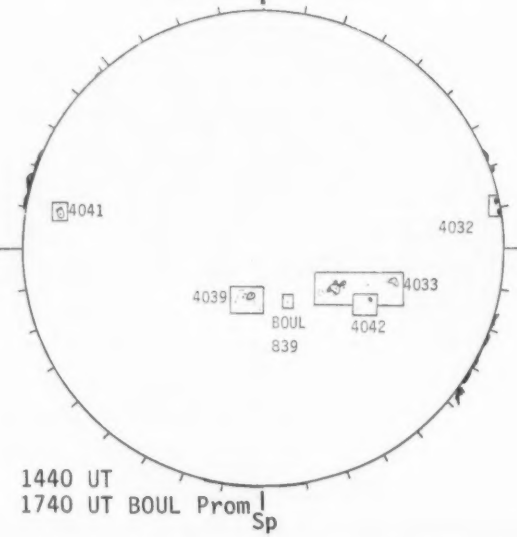
MT. WILSON MAGNETOGRAM



BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)

Sp

1440 UT
1740 UT BOUL Prom

Sp

Sp

D E C E M B E R 30, 1 9 8 2 (P= 3.27, B_o=-2.76, L_o= 265.67)

MT. WILSON MAGNETOGRAM

Bright= +
Dark = -

Np

E

16.3-17.2 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed= -

Np

NO DATA

MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -

Np

Delta Y=12.7
Delta X= 9.6

W

18.91 -
19.86 UT

SACRAMENTO PEAK H-ALPHA

NO DATA

E

Sp

BOULDER SUNSPOTS

4041
BOUL
839
4039
4033
4042

1725 UT
2030 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (5303 Angstrom)

NO DATA

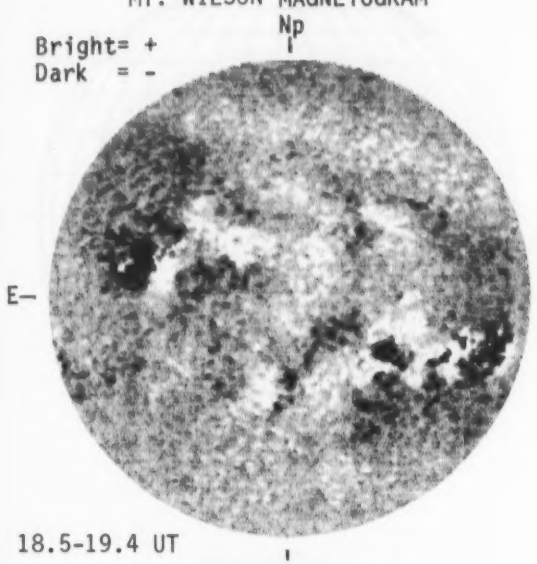
W

Sp

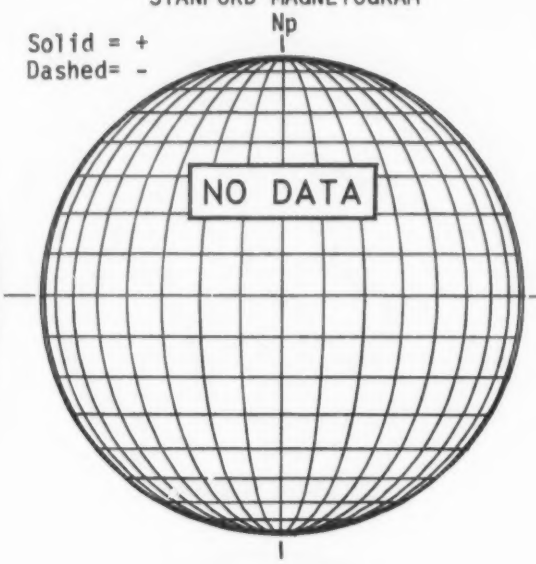
73
Dec 82

D E C E M B E R 31, 1 9 8 2 (P= 2.79, B_0=-2.88, L_0= 252.50)

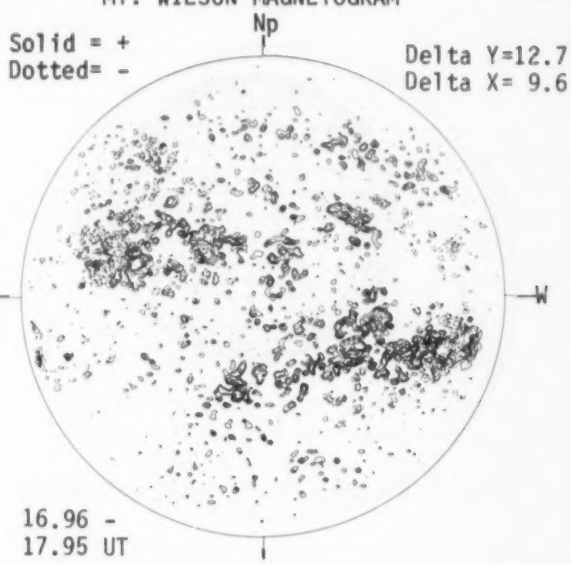
MT. WILSON MAGNETOGRAM



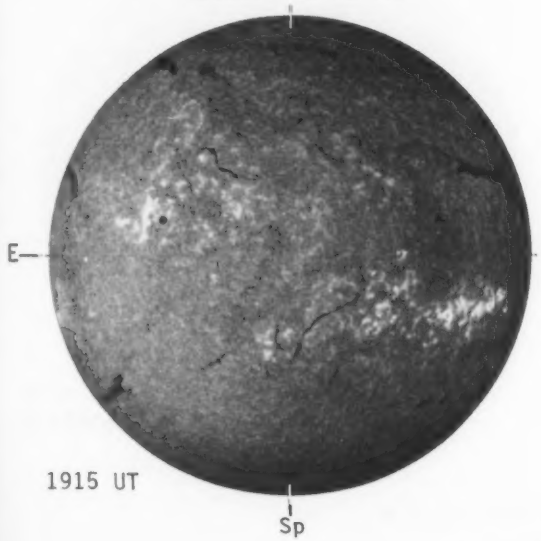
STANFORD MAGNETOGRAM



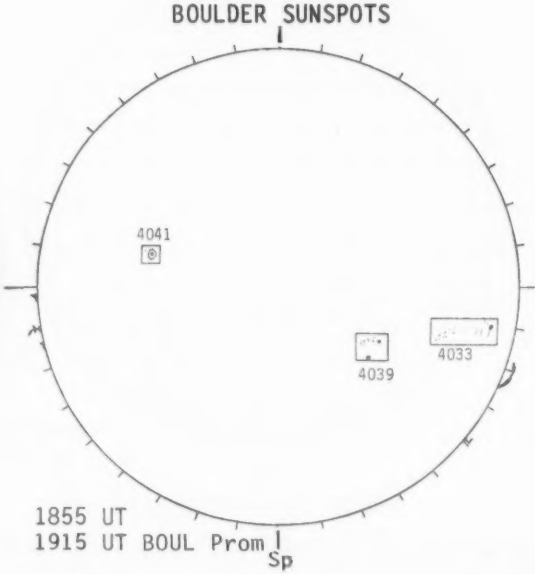
MT. WILSON MAGNETOGRAM



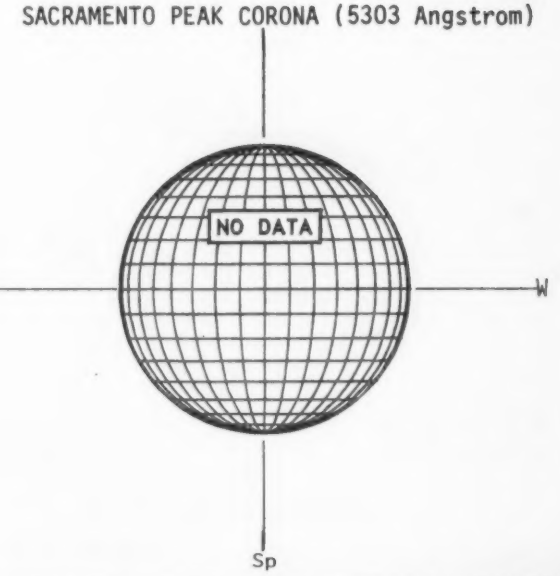
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)



REGIONS OF SUNSPOT ACTIVITY
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

DECEMBER 1982

NOAA/ USAF Region	Mt Wilson Region	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4007		LEAR	11	26	0125	S12	E77	12	1.9		A	AXX		1		3
4007		LEAR	11	27	0012	S13	E55	12	1.2		B	BXO	10	3	3	3
4007		MANI	11	27	0205	S13	E58	12	1.5			BXO	10	4	2	3
4007	23453	MWIL	11	27	1545	S15	E49	12	1.4	3	(B)					
4007		HOLL	11	27	1818	S14	E46	12	1.2		B	BXO	20	6	4	4
4007		LEAR	11	28	0018	S15	E44	12	1.3		B	DAO	70	13	9	3
4007		RAMY	11	28	1400	S13	E34	12	1.2		B	CAO	70	11	5	2
4007		HOLL	11	28	1427	S13	E33	12	1.1		B	DAO	120	11	5	2
4007		BOUL	11	28	1600	S12	E29	11	30.9		B	DSO	120	8	5	1
4007		MANI	11	29	0001	S13	E28	12	1.1		B	DSO	180	15	7	3
4007		LEAR	11	29	0021	S14	E29	12	1.2		BD	DAI	210	25	10	3
4007		RAMY	11	29	1415	S16	E24	12	1.4		B	EAO	140	30	12	2
4007		BOUL	11	29	1530	S13	E18	12	1.0		BG	ESI	150	35	12	2
4007		HOLL	11	29	1550	S13	E20	12	1.2		BG	EAI	240	29	11	3
4007		MANI	11	29	2348	S15	E17	12	1.3			DSO	230	22	10	2
4007		LEAR	11	30	0110	S14	E16	12	1.3		BG	EAI	200	31	12	3
4007		RAMY	11	30	1350	S15	E08	12	1.2		B	EAO	210	25	11	2
4007		HOLL	11	30	1715	S15	E05	12	1.1		BG	EAI	190	21	11	3
4007		MANI	11	30	2321	S15	E01	12	1.0			EAO	200	26	12	3
4007		MANI	12	01	0001	S15	E01	12	1.1		B	EAO	200	26	12	3
4007		LEAR	12	01	0210	S14	E02	12	1.2		BG	EAI	2030	22	13	3
4007		RAMY	12	01	1320	S13	W03	12	1.3		BG	EAI	270	27	15	4
4007	23453	MWIL	12	01	1600	S14	W07	12	1.1	4	(B)					
4007		LEAR	12	02	0031	S15	W13	12	1.0		BG	FAI	230	31	16	3
4007		RAMY	12	02	1255	S13	W17	12	1.3		B	EKO	300	19	14	3
4007	23453	MWIL	12	02	1600	S14	W20	12	1.2	5	(BY)					
4007		HOLL	12	02	1918	S15	W23	12	1.1		BG	DAO	250	11	8	2
4007		LEAR	12	03	0057	S15	W25	12	1.1		BG	EAI	290	31	14	3
4007		BOUL	12	03	1545	S13	W31	12	1.3		B	ESO	190	8	11	2
4007	23453	MWIL	12	03	1630	S15	W33	12	1.2	5	(D)					
4007		HOLL	12	03	1745	S15	W33	12	1.2		BG	ESO	300	25	12	3
4007		MANI	12	03	2310	S15	W37	12	1.2			EAO	180	11	10	2
4007		LEAR	12	04	0048	S13	W36	12	1.3		BG	EAI	290	17	11	3
4007		BOUL	12	04	1530	S14	W42	12	1.5		BG	EAI	200	26	11	1
4007		HOLL	12	04	1543	S16	W45	12	1.2		BG	EAI	120	20	11	3
4007		RAMY	12	04	1545	S14	W43	12	1.4		BGD	EAO	310	25	11	3
4007	23453	MWIL	12	04	1630	S16	W44	12	1.3	5	(BY)					
4007		LEAR	12	05	0018	S15	W48	12	1.4		BGD	EKI	680	29	11	3
4007		MANI	12	05	0111	S15	W50	12	1.3			EAI	580	24	11	3
4007		RAMY	12	05	1320	S15	W56	12	1.3		BGD	EKO	680	26	12	3
4007		BOUL	12	05	1540	S13	W56	12	1.4		B	EKC	950	25	13	3
4007	23453	MWIL	12	05	1600	S17	W56	12	1.4	5	(D)					
4007		HOLL	12	05	1800	S15	W60	12	1.2		BG	EKI	1100	15	13	3
4007		PALE	12	05	1915	S15	W60	12	1.3			EKO	520	8	11	2
4007		MANI	12	06	0001	S15	W63	12	1.2			EKO	970	15	12	3
4007		LEAR	12	06	0635	S15	W65	12	1.3		BGD	EKI	560	13	12	2
4007		RAMY	12	06	1506	S14	W72	12	1.2		BGD	EKO	540	15	11	2
4007		HOLL	12	06	1545	S16	W72	12	1.2		BGD	EKI	820	14	14	4
4007	23453	MWIL	12	06	1630	S17	W69	12	1.4	4	(D)					
4007		BOUL	12	06	1735	S14	W72	12	1.3		BGD	EKC	490	7	14	1
4007		MANI	12	07	0015	S15	W76	12	1.3			EKC	1360	5	14	3
4007		LEAR	12	07	0115	S15	W75	12	1.4		BD	EKO	800	6	12	3
4007		RAMY	12	07	1422	S14	W75	12	1.9		BGD	EKO	260	4	11	2
4007	23453	MWIL	12	07	1600	S16	W80	12	1.6	4	B					
4007		HOLL	12	07	1906	S16	W80	12	1.7		BGD	DKC	200	4	5	3
4007		PALE	12	07	2020	S15	W85	12	1.4			CAO	130	5	8	2
4007		LEAR	12	08	0119	S16	W88	12	1.4		B	DSO	80	2	7	3
0001		MANI	11	29	0001	S18	E35	12	1.7		A	AXX	10	1		3
0001	23457	MWIL	12	01	1600	S18	E01	12	1.7	3	(BF)					
0001	23457	MWIL	12	02	1600	S18	W13	12	1.7	3	(AF)					
4008		LEAR	11	27	0012	S22	E70	12	2.4		A	AXX		1		3
4008		MANI	11	27	0205	S23	E71	12	2.6			AXX	10	1		3
4008	23454	MWIL	11	27	1545	S21	E62	12	2.4	3	(B)					
4008		HOLL	11	27	1818	S22	E61	12	2.5		A	AXX		1		4
4008		LEAR	11	28	0018	S22	E60	12	2.6		B	CRO	10	3	4	3
4008		RAMY	11	28	1400	S21	E49	12	2.3		A	AXX	20	1	1	2
4008		HOLL	11	28	1427	S22	E49	12	2.4		A	AXX	10	1		2
4008		BOUL	11	28	1600	S22	E50	12	2.5		A	AXX		1		1
4008		MANI	11	29	0001	S23	E46	12	2.5		A	AXX	10	1		3

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NOAA/ USAF Region	Mt Wilson Region	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4008		LEAR	11	29	0021	S22	E44	12	2.4		A	AXX		1		3
4005		LEAR	11	26	0125	S10	E85	12	2.5		A	HKX	350	1	4	3
4005		RAMY	11	26	1350	S11	E79	12	2.5		B	CKO	380	9	9	3
4005		BOUL	11	26	1520	S11	E74	12	2.2		A	HKX	360	3	4	3
4005	23449	MWIL	11	26	1600	S11	E77	12	2.5	3	(AP)					
4005		LEAR	11	27	0012	S11	E74	12	2.6		B	DKI	590	7	9	3
4005		MANI	11	27	0205	S12	E75	12	2.7			DKI	790	7	10	3
4005	23449	MWIL	11	27	1545	S10	E64	12	2.5	5	(D)					
4005		HOLL	11	27	1818	S11	E63	12	2.5		B	DKI	430	18	10	4
4005		LEAR	11	28	0018	S11	E61	12	2.6		BD	DKI	870	16	11	3
4005		RAMY	11	28	1400	S10	E54	12	2.6		BGD	EKO	600	21	11	2
4005		HOLL	11	28	1427	S10	E52	12	2.5		BGD	DKI	690	12	10	2
4005		BOUL	11	28	1600	S10	E47	12	2.2		B	CHO	750	11	7	1
4005		MANI	11	29	0001	S11	E48	12	2.6		BD	DHO	870	17	10	3
4005		LEAR	11	29	0021	S11	E47	12	2.6		BD	DKI	850	25	10	3
4005		RAMY	11	29	1415	S12	E41	12	2.7		BGD	EKO	820	23	11	2
4005		BOUL	11	29	1530	S08	E37	12	2.4		BD	DKI	620	22	9	2
4005		HOLL	11	29	1550	S10	E38	12	2.5		BGD	EKI	770	25	11	3
4005		MANI	11	29	2348	S11	E35	12	2.6			DKI	810	24	10	2
4005		LEAR	11	30	0110	S11	E34	12	2.6		BD	DKI	800	22	10	3
4005		RAMY	11	30	1350	S11	E27	12	2.6		B	EKO	680	28	11	2
4005		HOLL	11	30	1715	S11	E25	12	2.6		BG	DKI	730	26	10	3
4005		MANI	11	30	2321	S11	E21	12	2.6			DKI	640	28	10	3
4005		MANI	12	01	0001	S11	E21	12	2.6		B	DKI	640	28	10	3
4005		LEAR	12	01	0210	S11	E20	12	2.6		B	DKI	710	24	9	3
4005		RAMY	12	01	1320	S10	E15	12	2.7		BG	EKI	680	43	10	4
4005	23449	MWIL	12	01	1600	S10	E12	12	2.6	5	(B)					
4005		LEAR	12	02	0031	S10	E08	12	2.6		B	DKI	590	24	9	3
4005		RAMY	12	02	1255	S11	W00	12	2.5		BG	DKI	580	37	10	3
4005	23449	MWIL	12	02	1600	S10	W00	12	2.7	6	(B)					
4005		HOLL	12	02	1918	S11	W03	12	2.6		B	DHO	680	19	8	2
4005		LEAR	12	03	0057	S10	W06	12	2.6		B	DHI	620	41	9	3
4005		BOUL	12	03	1545	S09	W14	12	2.6		B	DHO	480	12	8	2
4005	23449	MWIL	12	03	1630	S11	W15	12	2.6	6	(B)					
4005		HOLL	12	03	1745	S10	W15	12	2.6		B	EHO	560	21	11	3
4005		MANI	12	03	2310	S11	W18	12	2.6			DHO	570	15	9	2
4005		LEAR	12	04	0048	S10	W19	12	2.6		B	DHI	680	27	9	3
4005		BOUL	12	04	1530	S09	W26	12	2.7		B	DHO	470	25	10	1
4005		HOLL	12	04	1543	S11	W28	12	2.5		B	DHO	580	16	8	3
4005		RAMY	12	04	1545	S09	W26	12	2.7		B	DKI	550	33	8	3
4005	23449	MWIL	12	04	1630	S11	W28	12	2.6	6	(B)					
4005		LEAR	12	05	0018	S11	W32	12	2.6		B	DHI	650	13	8	3
4005		MANI	12	05	0111	S11	W32	12	2.6			CHO	700	20	9	3
4005		RAMY	12	05	1320	S11	W38	12	2.7		B	DKO	520	23	8	3
4005		BOUL	12	05	1540	S10	W41	12	2.6		BG	CHO	660	17	7	3
4005	23499	MWIL	12	05	1600	S12	W41	12	2.6	6	(BP)					
4005		HOLL	12	05	1800	S11	W42	12	2.6		B	DKI	600	13	8	3
4005		PALE	12	05	1915	S11	W42	12	2.6			DKO	580	6	9	2
4005		MANI	12	06	0001	S11	W45	12	2.6			DKO	810	6	9	3
4005		LEAR	12	06	0635	S12	W48	12	2.7		B	CHI	490	10	8	2
4005		RAMY	12	06	1506	S11	W55	12	2.5		B	DKO	530	13	7	2
4005		HOLL	12	06	1545	S11	W55	12	2.5		BG	DKI	980	9	8	4
4005	23449	MWIL	12	06	1630	S12	W55	12	2.5	5	(BP)					
4005		BOUL	12	06	1735	S12	W57	12	2.4		B	CHO	540	3	6	1
4005		MANI	12	07	0015	S11	W59	12	2.6			DHO	810	2	7	3
4005		LEAR	12	07	0115	S12	W58	12	2.7		B	CKO	570	10	8	3
4005		RAMY	12	07	1422	S10	W69	12	2.4		B	DKO	980	7	6	2
4005	23449	MWIL	12	07	1600	S12	W67	12	2.6	5	BP					
4005		HOLL	12	07	1906	S13	W69	12	2.6		B	CKO	540	7	5	3
4005		PALE	12	07	2020	S12	W70	12	2.6			DKO	580	7	5	2
4005		LEAR	12	08	0119	S12	W72	12	2.6		B	DKO	550	6	6	3
4005		RAMY	12	08	1222	S11	W78	12	2.6		B	DKO	440	12	6	3
4005		LEAR	12	09	0042	S12	W87	12	2.5		A	HKX	200	3	5	2
4013		RAMY	12	02	1255	N14	E09	12	3.2		B	DAO	60	14	6	3
4013	23460	MWIL	12	02	1600	N13	E07	12	3.2	3	(BY)					
4013		HOLL	12	02	1918	N14	E06	12	3.3		B	DAO	50	10	7	2
4013		LEAR	12	03	0057	N14	E04	12	3.3		B	CAO	50	10	7	3
4013		BOUL	12	03	1545	N13	W06	12	3.2		B	DSO	90	14	7	2
4013	23460	MWIL	12	03	1630	N13	W06	12	3.2	5	(B)					

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4013		HOLL	12	03	1745	N14	W06	12	3.3		B	DAO	80	16	8	3
4013		MANI	12	03	2310	N10	W10	12	3.2			EAO	150	12	7	2
4013		LEAR	12	04	0048	N15	W11	12	3.2		B	DAI	210	23	8	3
4013		BOUL	12	04	1530	N13	W17	12	3.4		B	DAI	160	20	8	1
4013		HOLL	12	04	1543	N13	W19	12	3.2		B	DAI	140	17	9	3
4013		RAMY	12	04	1545	N14	W17	12	3.4		A	AXX	20	2	1	3
4013		RAMY	12	04	1545	N14	W17	12	3.4		B	DAO	240	23	8	3
4013	23460	MWIL	12	04	1630	N13	W20	12	3.2	5	(B)					
4013		LEAR	12	05	0018	N14	W24	12	3.2		B	DAI	190	17	8	3
4013		MANI	12	05	0111	N14	W24	12	3.2			DAI	200	19	9	3
4013		RAMY	12	05	1320	N13	W31	12	3.2		B	DAO	160	21	8	3
4013		BOUL	12	05	1540	N14	W31	12	3.3		B	CAO	160	16	12	3
4013	23460	MWIL	12	05	1600	N13	W33	12	3.2	5	(B)					
4013		HOLL	12	05	1800	N13	W35	12	3.1		B	DAI	230	15	9	3
4013		PALE	12	05	1915	N14	W35	12	3.2			DSO	120	10	9	2
4013		MANI	12	06	0001	N14	W37	12	3.2			DSO	190	9	10	3
4013		LEAR	12	06	0635	N14	W41	12	3.2		B	DAO	260	11	8	2
4013		RAMY	12	06	1506	N15	W45	12	3.2		B	DAO	230	23	9	2
4013		HOLL	12	06	1545	N14	W55	12	2.5		B	DKI	250	17	9	4
4013	23460	MWIL	12	06	1630	N14	W46	12	3.2	4	(B)					
4013		BOUL	12	06	1735	N15	W47	12	3.2		B	CSO	60	5	9	1
4013		MANI	12	07	0015	N14	W50	12	3.2			DSO	210	10	10	3
4013		RAMY	12	07	1422	N15	W60	12	3.1		B	DAO	260	14	10	2
4013	23460	MWIL	12	07	1600	N14	W59	12	3.2	5	B					
4013		HOLL	12	07	1906	N14	W63	12	3.0		B	DSO	100	12	9	3
4013		PALE	12	07	2020	N15	W64	12	3.0			DSO	80	10	9	2
4013		LEAR	12	08	0119	N15	W65	12	3.1		B	CAO	110	8	9	3
4013		RAMY	12	08	1222	N16	W72	12	3.1		B	DKO	280	15	10	3
4013		LEAR	12	09	0042	N15	W78	12	3.1		B	DSO	100	5	6	2
4023		HOLL	12	02	1918	N15	E17	12	4.1		A	AXX		1		2
4023	23470	MWIL	12	07	1600	N13	W47	12	4.1	1	X					
4023		RAMY	12	08	1222	N14	W59	12	4.1		B	CAO	40	2	2	3
4023		LEAR	12	09	0042	N15	W68	12	3.9		B	BXO		2	5	2
4019		HOLL	12	05	1800	S22	W18	12	4.4		A	AXX		1		3
4019		LEAR	12	06	0635	S23	W23	12	4.5		B	BXO	10	10	10	2
4019		RAMY	12	06	1506	S22	W30	12	4.3		B	DAO	120	18	6	2
4019		HOLL	12	06	1545	S22	W30	12	4.3		B	DAI	80	13	7	4
4019	23466	MWIL	12	06	1630	S23	W30	12	4.4	5	(BY)					
4019		BOUL	12	06	1735	S23	W31	12	4.3		B	DSO	50	5	5	1
4019		MANI	12	07	0015	S23	W35	12	4.3			DSO	110	8	7	3
4019		LEAR	12	07	0115	S22	W35	12	4.4		B	DAO	120	15	6	3
4019		RAMY	12	07	1422	S23	W44	12	4.2		B	DAO	90	9	9	2
4019	23466	MWIL	12	07	1600	S23	W42	12	4.4	4	B					
4019		HOLL	12	07	1906	S23	W45	12	4.3		B	DSO	170	12	8	3
4019		PALE	12	07	2020	S23	W46	12	4.3			DAO	140	6	8	2
4019		LEAR	12	08	0119	S23	W47	12	4.4		B	DAO	220	12	9	3
4019		RAMY	12	08	1222	S23	W55	12	4.3		B	DKO	190	15	10	3
4019		LEAR	12	09	0042	S24	W61	12	4.3		B	DSO	150	8	9	2
4019		RAMY	12	09	1730	S22	W69	12	4.4		B	DAO	190	3	8	3
4019		BOUL	12	09	1755	S22	W70	12	4.4		B	DRO	100	6	9	2
4019		LEAR	12	10	0038	S23	W72	12	4.5		B	DAO	100	6	10	3
4019		RAMY	12	10	1405	S24	W79	12	4.5		A	HAX	130	1	3	3
4019	23466	MWIL	12	10	1600	S25	W78	12	4.6	3	(AF)					
4019		MANI	12	11	0123	S23	W87	12	4.4			DRO	90	2	2	2
4018		HOLL	12	05	1800	S09	W12	12	4.8		A	AXX	10	2		3
4018		PALE	12	05	1915	S09	W13	12	4.8			BXO	20	3	3	2
4018		MANI	12	06	0001	S09	W15	12	4.9			CRO	20	4	3	3
4018		LEAR	12	06	0635	S09	W20	12	4.8		B	CRO	20	11	5	2
4018		RAMY	12	06	1506	S08	W25	12	4.8		B	DAO	140	11	6	2
4018		HOLL	12	06	1545	S09	W26	12	4.7		B	DSO	60	10	5	4
4018	23467	MWIL	12	06	1630	S09	W26	12	4.7	4	(B)					
4018		BOUL	12	06	1735	S08	W26	12	4.8		B	BXO	10	4	4	1
4018		MANI	12	07	0015	S09	W30	12	4.8			BXO	30	7	7	3
4018		LEAR	12	07	0115	S09	W31	12	4.7		B	BXO	30	11	4	3
4018		RAMY	12	07	1422	S09	W38	12	4.7		B	CAO	50	7	4	2
4018	23467	MWIL	12	07	1600	S09	W37	12	4.9	3	B					
4018		HOLL	12	07	1906	S09	W40	12	4.8		B	CRO	30	8	3	3
4018		PALE	12	07	2020	S09	W41	12	4.8			BXO	20	4	4	2

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4018		LEAR	12	08	0119	S09 W43	12	4.8		B	BXO	10	6	5	3
4018		RAMY	12	08	1222	S08 W50	12	4.8		B	DRO	30	3	4	3
4018		LEAR	12	09	0042	S08 W57	12	4.8		B	BXO		2	5	2
4015		MANI	11	30	2321	N03 E60	12	5.5			AXX		1		3
4015		MANI	12	01	0001	N03 E60	12	5.5		A	AXX		1		3
4015		LEAR	12	02	0031	N04 E44	12	5.3		A	AXX	10	1		3
4015		LEAR	12	04	0048	N01 E14	12	5.1		A	AXX		1		3
4015		BOUL	12	04	1530	N04 E10	12	5.4		A	AXX		1		1
4015		HOLL	12	04	1543	N04 E11	12	5.5		A	AXX		1		3
4015	23463	MWIL	12	04	1630	N02 E09	12	5.4	2	(AF)					
4015		LEAR	12	05	0018	N03 E05	12	5.4		A	AXX		1		3
4015		MANI	12	05	0111	N04 E04	12	5.3			AXX		1		3
4015		RAMY	12	05	1320	N02 W02	12	5.4		A	AXX	10	3	1	3
4015		BOUL	12	05	1540	N05 W06	12	5.2		A	AXX	10	4	2	3
4015	23463	MWIL	12	05	1600	N02 W04	12	5.4	3	(AF)					
4015		HOLL	12	05	1800	N03 W06	12	5.3		A	AXX		1		3
4015	23463	MWIL	12	06	1630	N02 W17	12	5.4	1	AP					
4010		RAMY	11	29	1415	N07 E88	12	6.2		A	HKX	60	1	5	2
4010		BOUL	11	29	1530	N08 E80	12	5.6		A	HAX	80	1	2	2
4010		HOLL	11	29	1550	N08 E83	12	5.9		A	HAX	60	1	2	3
4010		MANI	11	29	2348	N09 E80	12	6.0			HSX	220	1	2	2
4010		LEAR	11	30	0110	N08 E78	12	5.9		A	HSX	70	1	2	3
4010		RAMY	11	30	1350	N08 E70	12	5.8		A	HAX	190	2	5	2
4010		HOLL	11	30	1715	N10 E75	12	6.4		B	ESO	90	4	12	3
4010		MANI	11	30	2321	N08 E67	12	6.0			HSX	130	2	2	3
4010		MANI	12	01	0001	N08 E67	12	6.0		A	HSX	130	2	2	3
4010		LEAR	12	01	0210	N10 E70	12	6.4		B	ESO	110	5	13	3
4010		RAMY	12	01	1320	N09 E65	12	6.4		B	EAO	390	8	13	4
4010	23458	MWIL	12	01	1600	N08 E57	12	5.9	4	(AP)					
4010		LEAR	12	02	0031	N09 E51	12	5.9		A	HAX	140	4	2	3
4010		RAMY	12	02	1255	N08 E45	12	5.9		B	DAO	90	3	3	3
4010	23458	MWIL	12	02	1600	N09 E43	12	5.9	4	(AP)					
4010		HOLL	12	02	1918	N08 E40	12	5.8		B	DSO	100	3	3	2
4010		LEAR	12	03	0057	N08 E38	12	5.9		A	HKX	110	4	3	3
4010		BOUL	12	03	1545	N10 E28	12	5.8		B	DSO	60	5	4	2
4010	23458	MWIL	12	03	1630	N08 E29	12	5.9	5	(BP)					
4010		HOLL	12	03	1745	N09 E29	12	5.9		B	DSO	70	10	4	3
4010		MANI	12	03	2310	N09 E26	12	5.9			DSO	140	7	7	2
4010		LEAR	12	04	0048	N10 E25	12	5.9		B	CSO	100	13	7	3
4010		BOUL	12	04	1530	N10 E18	12	6.0		B	CAI	60	8	6	1
4010		HOLL	12	04	1543	N09 E17	12	5.9		B	DAO	30	8	6	3
4010		RAMY	12	04	1545	N09 E19	12	6.1		B	CAO	40	14	6	3
4010	23458	MWIL	12	04	1630	N08 E15	12	5.8	4	(BP)					
4010		LEAR	12	05	0018	N08 E11	12	5.8		B	DSO	50	10	7	3
4010		MANI	12	05	0111	N09 E13	12	6.0			DSO	60	10	6	3
4010		RAMY	12	05	1320	N07 E05	12	5.9		B	CAO	40	10	4	3
4010		BOUL	12	05	1540	N09 E03	12	5.9		B	CRO	20	11	3	3
4010	23458	MWIL	12	05	1600	N08 E03	12	5.9	4	(AP)					
4010		HOLL	12	05	1800	N08 E03	12	6.0		B	CAO	40	6	5	3
4010		PALE	12	05	1915	N08 E02	12	6.0			CRO	30	4	4	2
4010		MANI	12	06	0001	N09 W00	12	6.0			CSO	50	8	5	3
4010		LEAR	12	06	0635	N08 W07	12	5.7		B	CSO	30	6	4	2
4010		RAMY	12	06	1506	N09 W10	12	5.9		B	CSO	80	9	4	2
4010		HOLL	12	06	1545	N07 W03	12	6.4		B	BXO	10	2	3	4
4010		HOLL	12	06	1545	N08 W11	12	5.8		B	CSO	20	6	4	4
4010	23458	MWIL	12	06	1630	N08 W11	12	5.9	4	(BP)					
4010		BOUL	12	06	1735	N09 W13	12	5.8		B	CSO	20	2	3	1
4010		MANI	12	07	0015	N08 W15	12	5.9			CSO	20	2	4	3
4010		LEAR	12	07	0115	N08 W17	12	5.8		A	AXX	10	2	1	3
4010		RAMY	12	07	1422	N08 W22	12	5.9		B	CSO	30	3	2	2
4010	23458	MWIL	12	07	1600	N07 W23	12	5.9	3	AP					
4010		HOLL	12	07	1906	N08 W21	12	6.2		B	CSO	20	8	9	3
4010		PALE	12	07	2020	N07 W25	12	6.0			HRX	20	1	1	2
4010		LEAR	12	08	0119	N07 W28	12	6.0		A	AXX		1		3
4010		RAMY	12	08	1222	N08 W34	12	6.0		A	HAX	10	1	1	3
0002	23471	MWIL	12	07	1600	N11 W18	12	6.3	2	X					
0002	23471	MWIL	12	10	1600	N10 W59	12	6.2	4	(B)					
0002	23471	MWIL	12	11	1630	N09 W71	12	6.4	3	(B)					

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NOAA/ USAF Region	Mt Wilson Region	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
0003	23461	MWIL	12	02	1600	N07	E55	12	6.8	3	(AP)					
0003	23461	MWIL	12	03	1630	N07	E41	12	6.8	3	(B)					
0003	23461	MWIL	12	04	1630	N08	E24	12	6.5	2	(AP)					
0003	23461	MWIL	12	05	1600	N09	E12	12	6.6	2	(AF)					
4012		MANI	12	01	0001	N09	E81	12	7.1		B	CRO	170	3	2	3
4012	23459	MWIL	12	01	1600	N11	E69	12	6.9	3	(AP)					
4012		LEAR	12	02	0031	N12	E69	12	7.2		B	EAO	120	12	12	3
4012		RAMY	12	02	1255	N13	E58	12	6.9		B	DAO	90	16	5	3
4012	23459	MWIL	12	02	1600	N13	E56	12	6.9	4	(D)					
4012		HOLL	12	02	1918	N12	E55	12	7.0		BG	DAI	130	15	5	2
4012		LEAR	12	03	0057	N12	E50	12	6.8		BGD	DAI	140	18	8	3
4012		BOUL	12	03	1545	N13	E39	12	6.6		BG	DSO	80	10	6	2
4012	23459	MWIL	12	03	1630	N12	E40	12	6.7	4	(D)					
4012		HOLL	12	03	1745	N12	E42	12	6.9		BG	DAO	150	17	6	3
4012		MANI	12	03	2310	N12	E38	12	6.8			DAO	130	17	5	2
4012		LEAR	12	04	0048	N12	E36	12	6.7		BG	DAI	150	21	9	3
4012		BOUL	12	04	1530	N13	E28	12	6.8		B	CRI	40	9	4	1
4012		HOLL	12	04	1543	N12	E27	12	6.7		B	DSI	40	12	4	3
4012		RAMY	12	04	1545	N13	E29	12	6.8		B	CAO	20	11	15	3
4012	23459	MWIL	12	04	1630	N12	E27	12	6.7	3	(D)					
4012		LEAR	12	05	0018	N13	E23	12	6.7		BG	CRI	40	13	6	3
4012		MANI	12	05	0111	N12	E26	12	7.0			CSO	60	13	10	3
4012		RAMY	12	05	1320	N11	E15	12	6.7		B	BXO	10	4	3	3
4012		BOUL	12	05	1540	N12	E12	12	6.6		B	BXO		2	3	3
4012	23459	MWIL	12	05	1600	N13	E13	12	6.6	3	(BY)					
4012		HOLL	12	05	1800	N15	E13	12	6.7		B	CRO	20	18	5	3
4012		PALE	12	05	1915	N13	E12	12	6.7			BXO	10	2	3	2
4012		MANI	12	06	0001	N13	E10	12	6.8			CRO	30	3	3	3
4012		LEAR	12	06	0635	N11	E05	12	6.7		B	BXO	10	7	5	2
4012		RAMY	12	06	1506	N09	W01	12	6.6		B	BXO	40	7	6	2
4012		HOLL	12	06	1545	N13	W00	12	6.7		A	AXX		1		4
4012	23459	MWIL	12	06	1630	N13	W01	12	6.6	4	(AF)					
4012		BOUL	12	06	1735	N10	E01	12	6.8		A	AXX		1		1
4012		MANI	12	07	0015	N13	W05	12	6.6			AXX	10	1		3
4012		RAMY	12	07	1422	N11	W12	12	6.7		B	BXO	30	5	3	2
4012		PALE	12	07	2020	N10	W18	12	6.5			BXO	20	2	3	2
4012		LEAR	12	08	0119	N12	W24	12	6.2		B	BXO		2	3	3
4012		RAMY	12	08	1222	N11	W30	12	6.3		B	DAO	50	11	4	3
4012		LEAR	12	09	0042	N11	W37	12	6.2		B	BXO	10	7	4	2
4012		RAMY	12	09	1730	N12	W46	12	6.3		B	CAO	60	6	4	3
4012		BOUL	12	09	1755	N12	W47	12	6.2		B	CRO	50	7	5	2
4012		LEAR	12	10	0038	N11	W50	12	6.3		B	DRO	80	8	6	3
4012		RAMY	12	10	1405	N12	W59	12	6.1		B	CAO	160	6	5	3
4012		LEAR	12	11	0006	N11	W64	12	6.2		B	DRO	30	4	4	3
4012		MANI	12	11	0123	N10	W65	12	6.2			DSO	100	4	3	2
4012		RAMY	12	11	1350	N09	W71	12	6.2		A	HAX	130	1	2	3
4012		PALE	12	11	1900	N09	W74	12	6.2		B	CSO	60	3	3	3
4012		HOLL	12	11	2104	N09	W77	12	6.1		A	AXX		1	1	3
4012		MANI	12	11	2342	N09	W78	12	6.1			AXX	20	1	1	3
4012		LEAR	12	12	0130	N09	W79	12	6.1		A	HRX	20	1	1	3
	23477	MWIL	12	11	1630	N13	W63	12	6.9	3	(AF)					
		RAMY	12	06	1506	N03	E05	12	7.0		B	BXO	40	8	5	2
		MANI	11	30	2321	N09	E81	12	7.1			CRO	170	3	2	3
4014		RAMY	12	02	1255	N05	E64	12	7.3		B	EAO	130	15	13	3
4014	23462	MWIL	12	02	1600	N08	E68	12	7.8	3	(BF)					
4014		HOLL	12	02	1918	N06	E64	12	7.6		B	CSO	60	1	6	2
4014		LEAR	12	03	0057	N08	E62	12	7.7		B	DAI	180	16	7	3
4014		BOUL	12	03	1545	N08	E50	12	7.4		B	DAO	240	11	8	2
4014	23462	MWIL	12	03	1630	N06	E52	12	7.6	5	(D)					
4014		HOLL	12	03	1745	N07	E51	12	7.6		BGD	EKI	360	16	11	3
4014		MANI	12	03	2310	N07	E48	12	7.6			EAI	430	11	10	2
4014		LEAR	12	04	0048	N07	E46	12	7.5		BG	ESI	370	17	11	3
4014		BOUL	12	04	1530	N08	E39	12	7.6		BGD	EAI	360	36	12	1
4014		HOLL	12	04	1543	N07	E37	12	7.4		BG	EAI	210	33	11	3
4014		RAMY	12	04	1545	N06	E39	12	7.6		BGD	EAI	260	38	12	3
4014	23462	MWIL	12	04	1630	N06	E36	12	7.4	5	(D)					

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4014		LEAR	12	05	0018	N07	E32	12	7.4		B	ESI	510	39	12	3
4014		MANI	12	05	0111	N06	E32	12	7.4			EAI	440	36	12	3
4014		RAMY	12	05	1320	N06	E26	12	7.5		BG	EAO	370	44	12	3
4014		BOUL	12	05	1540	N08	E21	12	7.2		BG	EKI	450	47	12	3
4014	23462	MWIL	12	05	1600	N07	E23	12	7.4	5	(BY)					
4014		HOLL	12	05	1800	N08	E22	12	7.4		BG	EAI	610	33	13	3
4014		PALE	12	05	1915	N07	E22	12	7.5			EKI	440	30	12	2
4014		MANI	12	06	0001	N07	E19	12	7.4			EKI	640	28	13	3
4014		LEAR	12	06	0635	N07	E15	12	7.4		BG	EKI	640	61	13	2
4014		RAMY	12	06	1506	N08	E10	12	7.4		BG	EKI	440	52	15	2
4014		HOLL	12	06	1545	N08	E09	12	7.3		BGD	FKI	660	48	16	4
4014	23462	MWIL	12	06	1630	N07	E09	12	7.4	5	(D)					
4014		BOUL	12	06	1735	N07	E08	12	7.3		BG	EKI	510	16	14	1
4014		MANI	12	07	0015	N08	E04	12	7.3			EKI	690	29	15	3
4014		LEAR	12	07	0115	N07	E04	12	7.4		BG	EKI	670	26	14	3
4014		RAMY	12	07	1422	N08	W05	12	7.2		BGD	EKI	580	68	13	2
4014	23462	MWIL	12	07	1600	N07	W05	12	7.3	5	(BY)					
4014		HOLL	12	07	1906	N07	W06	12	7.3		BGD	EHI	700	50	14	3
4014		PALE	12	07	2020	N07	W07	12	7.3			EKI	630	37	15	2
4014		LEAR	12	08	0119	N07	W08	12	7.5		BG	EKI	680	44	14	3
4014		RAMY	12	08	1222	N08	W16	12	7.3		BGD	EKI	580	69	15	3
4014		LEAR	12	09	0042	N07	W22	12	7.4		BG	EKI	490	44	14	2
4014		RAMY	12	09	1730	N07	W32	12	7.3		BGD	EKI	350	49	15	3
4014		BOUL	12	09	1755	N09	W32	12	7.3		BGD	EKI	460	48	15	2
4014		LEAR	12	10	0038	N07	W37	12	7.3		BG	EKI	710	50	15	3
4014		RAMY	12	10	1405	N07	W44	12	7.3		BGD	EKI	470	50	15	3
4014	23462	MWIL	12	10	1600	N06	W46	12	7.2	5	(D)					
4014		LEAR	12	11	0006	N07	W50	12	7.3		BGD	EKI	980	51	13	3
4014		MANI	12	11	0123	N08	W51	12	7.2			EKC	790	35	13	2
4014		RAMY	12	11	1350	N06	W56	12	7.4		BGD	EKO	600	17	15	3
4014	23462	MWIL	12	11	1630	N05	W60	12	7.2	5	(D)					
4014		PALE	12	11	1900	N06	W61	12	7.2		BGD	EKO	420	24	14	3
4014		HOLL	12	11	2104	N06	W62	12	7.2		BGD	EKI	500	18	15	3
4014		MANI	12	11	2342	N06	W65	12	7.1			EKO	1090	23	14	3
4014		LEAR	12	12	0130	N07	W65	12	7.2		BG	EKI	690	17	13	3
4014		RAMY	12	12	1243	N08	W72	12	7.1		BGD	EKO	750	22	15	4
4014		BOUL	12	12	1615	N08	W73	12	7.2		BG	CSO	420	5	12	2
4014	23462	MWIL	12	12	1630	N05	W71	12	7.4	4	(BY)					
4014		LEAR	12	13	0100	N07	W78	12	7.2		B	EKO	350	8	13	2
4014		HOLL	12	13	1834	N06	W88	12	7.2		A	AXX		1		2
4016		BOUL	12	04	1530	S08	E77	12	10.4		B	BXO		2	4	1
4016		HOLL	12	04	1543	S09	E72	12	10.1		B	BXO	10	4	5	3
4016		RAMY	12	04	1545	S09	E70	12	9.9		B	BXO	30	2	6	3
4016	23464	MWIL	12	04	1630	S09	E70	12	9.9	3	(B)					
4016		LEAR	12	05	0018	S09	E63	12	9.7		B	BXO	10	3	4	3
4016		MANI	12	05	0111	S09	E66	12	10.0			BXO	40	4	5	3
4016		RAMY	12	05	1320	S10	E58	12	9.9		B	BXO	20	2	5	3
4016		BOUL	12	05	1540	S07	E55	12	9.8		B	BXO	10	3	3	3
4016	23464	MWIL	12	05	1600	S08	E57	12	9.9	2	(B)					
4016		HOLL	12	05	1800	S08	E55	12	9.9		B	BXO	30	4	6	3
4016		LEAR	12	06	0635	S09	E47	12	9.8		B	BXO	10	3	3	2
4016		HOLL	12	06	1545	S08	E40	12	9.7		A	AXX	10	2		4
4016	23464	MWIL	12	06	1630	S08	E40	12	9.7	2	(AP)					
4016		MANI	12	07	0015	S09	E36	12	9.7			AXX	10	2	1	3
4016		LEAR	12	07	0115	S09	E35	12	9.7		A	AXX	10	3	1	3
4016		RAMY	12	07	1422	S09	E28	12	9.7		B	CSO	50	4	3	2
4016	23464	MWIL	12	07	1600	S08	E28	12	9.8	4	B					
4016		HOLL	12	07	1906	S09	E27	12	9.8		B	BXO	20	5	3	3
4016		PALE	12	07	2020	S09	E25	12	9.7			CSO	20	3	3	2
4016		LEAR	12	08	0119	S09	E22	12	9.7		B	BXO	10	5	3	3
4016		RAMY	12	08	1222	S08	E16	12	9.7		B	CAO	20	8	4	3
4016		LEAR	12	09	0042	S09	E11	12	9.9		A	AXX		2	1	2
4017		RAMY	12	05	1320	S11	E78	12	11.4		B	BXO	30	2	4	3
4017		BOUL	12	05	1540	S10	E71	12	11.0		B	BXO	20	4	5	3
4017	23465	MWIL	12	05	1600	S09	E73	12	11.1	2	(AP)					
4017		HOLL	12	05	1800	S09	E72	12	11.2		A	AXX	10	2	1	3
4017		LEAR	12	06	0635	S10	E65	12	11.2		B	BXO	10	4	4	2
4017		RAMY	12	06	1506	S09	E60	12	11.1		P	DSO	60	6	5	2
4017		HOLL	12	06	1545	S09	E60	12	11.2		B	CRO	30	6	4	4

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4017	23465	MWIL	12	06	1630	S09	E59	12	11.1	3	(B)					
4017		BOUL	12	06	1735	S09	E58	12	11.1		B	CSO	40	3	5	1
4017		MANI	12	07	0015	S09	E57	12	11.3			DSO	110	7	6	3
4017		LEAR	12	07	0115	S09	E56	12	11.3		B	DAO	140	10	6	3
4017		RAMY	12	07	1422	S10	E48	12	11.2		B	DAO	130	13	7	2
4017	23465	MWIL	12	07	1600	S09	E47	12	11.2	4	B					
4017		HOLL	12	07	1906	S09	E45	12	11.2		B	CAO	140	13	6	3
4017		PALE	12	07	2020	S10	E45	12	11.2			DAO	110	10	6	2
4017		LEAR	12	08	0119	S09	E42	12	11.2		B	CSO	90	12	6	3
4017		RAMY	12	08	1222	S10	E35	12	11.1		B	DHO	100	16	7	3
4017		LEAR	12	09	0042	S09	E27	12	11.1		B	CSO	90	9	6	2
4017		RAMY	12	09	1730	S08	E19	12	11.2		B	DAO	130	19	8	3
4017		BOUL	12	09	1755	S08	E17	12	11.0		B	DSI	100	19	9	2
4017		LEAR	12	10	0038	S09	E14	12	11.1		B	DAO	160	15	9	3
4017		RAMY	12	10	1405	S09	E08	12	11.2		B	CAO	80	12	7	3
4017	23465	MWIL	12	10	1600	S09	E05	12	11.0	5	(BY)					
4017		LEAR	12	11	0006	S09	E04	12	11.3		B	DSO	140	18	10	3
4017		MANI	12	11	0123	S09	E01	12	11.1			DSO	80	10	7	2
4017		RAMY	12	11	1350	S09	W07	12	11.1		B	CAO	40	6	2	3
4017	23465	MWIL	12	11	1630	S10	W05	12	11.3	5	(B)					
4017		PALE	12	11	1900	S10	W07	12	11.3		B	CSO	120	11	10	3
4017		HOLL	12	11	2104	S10	W07	12	11.4		B	CSO	100	11	12	3
4017		MANI	12	11	2342	S10	W08	12	11.4			CSO	120	9	10	3
4017		LEAR	12	12	0130	S10	W09	12	11.4		B	DSO	80	11	10	3
4017		RAMY	12	12	1243	S09	W21	12	11.0		A	HAX	50	3	2	4
4017		BOUL	12	12	1615	S09	W12	12	11.8		B	CSI	30	8	12	2
4017	23465	MWIL	12	12	1630	S10	W23	12	11.0	5	(BP)					
4017		LEAR	12	13	0100	S11	W19	12	11.6		B	CSO	110	23	15	2
4017		RAMY	12	13	1322	S11	W30	12	11.3		B	EAO	60	14	12	4
4017	23465	MWIL	12	13	1545	S10	W35	12	11.0	4	(BP)					
4017		HOLL	12	13	1834	S11	W32	12	11.4		B	DSO	80	7	13	2
4017		PALE	12	13	2000	S10	W33	12	11.4		B	CAO	40	6	13	2
4017		LEAR	12	14	0341	S09	W42	12	11.0		A	HSX	30	2	1	2
4017		MANI	12	14	0400	S10	W39	12	11.2			CSO	50	2	5	3
4017		RAMY	12	14	1259	S13	W44	12	11.2		B	CAO	30	7	9	4
4017		HOLL	12	14	1628	S11	W44	12	11.4		B	CSO	30	8	12	3
4017		PALE	12	14	1933	S09	W51	12	11.0		A	HAX	20	1	1	3
4017		LEAR	12	15	0131	S12	W51	12	11.2		B	BXO	10	4	10	2
4017		HOLL	12	15	1537	S13	W52	12	11.7		B	BXO	30	4	8	3
4017		PALE	12	15	2008	S13	W56	12	11.6		B	CAO	30	4	5	4
4017		MANI	12	16	0015	S13	W58	12	11.6			CRO	40	4	4	3
4017		LEAR	12	16	0022	S12	W57	12	11.7		B	DSO	50	3	4	3
4017		BOUL	12	16	1528	S11	W65	12	11.8		B	BXO	10	2	7	1
4017		HOLL	12	16	1805	S13	W68	12	11.6		B	BXO	20	2	5	4
4017		PALE	12	16	1915	S12	W68	12	11.7			CRO	20	2	6	3
4017		LEAR	12	17	0015	S12	W70	12	11.7		B	DRO	10	2	4	2
	23482	MWIL	12	12	1630	S20	W19	12	11.2	3	(AP)					
4028	23473	MWIL	12	10	1600	S13	E21	12	12.3	3	(AF)					
4028	23478	MWIL	12	11	1630	S13	E03	12	11.9	4	(B)					
4028		RAMY	12	12	1243	S10	W11	12	11.7		B	BXO	40	13	4	4
4028	23478	MWIL	12	12	1630	S12	W12	12	11.8	3	(B)					
4028		RAMY	12	13	1322	S13	W19	12	12.1		B	DAO	30	8	4	4
4028	23484	MWIL	12	13	1545	S13	W20	12	12.1	2	(B)					
4028	23478	MWIL	12	13	1545	S13	W25	12	11.8	3	(B)					
4028		HOLL	12	13	1834	S13	W23	12	12.0		B	CRO	30	3	3	2
4028		PALE	12	13	2000	S12	W21	12	12.3		B	BXO	20	3	3	2
4028		LEAR	12	14	0341	S12	W31	12	11.8		B	BXO	10	10	6	2
4028		MANI	12	14	0400	S13	W29	12	12.0			DRO	40	8	10	3
4028		RAMY	12	14	1259	S13	W32	12	12.1		B	BXO	10	8	4	4
4028		HOLL	12	14	1628	S13	W34	12	12.1		B	CRO	20	3	3	3
4028		LEAR	12	15	0131	S13	W39	12	12.1		B	BXO	10	4	3	2
4028		RAMY	12	16	1310	S14	W65	12	11.6		B	DAO	100	4	6	2
4020		LEAR	12	06	0635	S05	E79	12	12.2		A	HSX	60	1	2	2
4020		RAMY	12	06	1506	S05	E76	12	12.3		A	HSX	60	1	2	2
4020		HOLL	12	06	1545	S05	E72	12	12.0		A	HSX	140	1	1	4
4020	23468	MWIL	12	06	1630	S05	E75	12	12.3	3	(AP)					
4020		BOUL	12	06	1735	S05	E73	12	12.2		A	HSX	50	1	1	1
4020		MANI	12	07	0015	S05	E70	12	12.2			HSX	110	1	1	3

REGIONS OF SUNSPOT ACTIVITY
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NOAA/ USAF Region	Mt Wilson Region	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4020		LEAR	12	07	0115	S05	E69	12	12.2		A	HSX	60	1	1	3
4020		RAMY	12	07	1422	S06	E61	12	12.2		A	HAX	60	1	2	2
4020	23468	MWIL	12	07	1600	S05	E61	12	12.2	4	AP					
4020		HOLL	12	07	1906	S06	E58	12	12.1		A	HSX	60	1	2	3
4020		PALE	12	07	2020	S05	E59	12	12.3			HSX	70	1	1	2
4020		LEAR	12	08	0119	S05	E55	12	12.2		A	HSX	60	1	1	3
4020		RAMY	12	08	1222	S06	E49	12	12.2		A	HHX	90	1	2	3
4020		LEAR	12	09	0042	S05	E42	12	12.2		A	HSX	60	1	1	2
4020		RAMY	12	09	1730	S06	E34	12	12.3		A	AAX	70	2	2	3
4020		BOUL	12	09	1755	S04	E32	12	12.1		A	HSX	60	3	1	2
4020		LEAR	12	10	0038	S05	E29	12	12.2		A	HSX	30	1	1	3
4020		RAMY	12	10	1405	S05	E22	12	12.2		A	HAX	40	1	2	3
4020	23468	MWIL	12	10	1600	S05	E22	12	12.3	5	(AP)					
4020		LEAR	12	11	0006	S04	E18	12	12.4		B	CSO	50	2	7	3
4020		MANI	12	11	0123	S04	E16	12	12.3			HSX	50	1	1	2
4020		RAMY	12	11	1350	S06	E09	12	12.3		A	HAX	40	1	2	3
4020	23468	MWIL	12	11	1630	S06	E07	12	12.2	5	(AP)					
4020		PALE	12	11	1900	S05	E09	12	12.5		B	CSO	60	5	9	3
4020		HOLL	12	11	2104	S06	E04	12	12.2		A	HSX	50	1	2	3
4020		MANI	12	11	2342	S05	E07	12	12.5			DSO	90	6	9	3
4020		LEAR	12	12	0130	S05	E02	12	12.2		B	CSO	50	3	3	3
4020		RAMY	12	12	1243	S05	E03	12	12.8		B	DAO	40	8	5	4
4020		BOUL	12	12	1615	S05	W07	12	12.2		B	CSO	20	2	4	2
4020	23468	MWIL	12	12	1630	S07	W07	12	12.2	4	(BP)					
4020		LEAR	12	13	0100	S05	W07	12	12.5		B	ESO	60	9	12	2
4020		RAMY	12	13	1322	S06	W16	12	12.4		B	DHO	70	2	6	4
4020	23468	MWIL	12	13	1545	S06	W17	12	12.4	4	(AP)					
4020		HOLL	12	13	1834	S06	W21	12	12.2		A	HSX	30	1	2	2
4020		PALE	12	13	2000	S06	W20	12	12.3		B	CSO	30	4	3	2
4020		LEAR	12	14	0341	S05	W26	12	12.2		A	HSX	30	1	1	2
4020		MANI	12	14	0400	S06	W23	12	12.4			CSO	40	4	7	3
4020		RAMY	12	14	1259	S07	W32	12	12.1		B	CSO	50	12	4	4
4020		HOLL	12	14	1628	S06	W34	12	12.1		B	CSO	50	6	4	3
4020		PALE	12	14	1933	S07	W36	12	12.1		B	CSO	30	4	3	3
4020		LEAR	12	15	0131	S07	W38	12	12.2		B	CSO	40	3	4	2
4020		HOLL	12	15	1537	S06	W45	12	12.3		A	HSX	20	1	1	3
4020		PALE	12	15	2008	S05	W47	12	12.3		A	HSX	20	1	1	4
4020		MANI	12	16	0015	S05	W50	12	12.3			HAX	20	2	1	3
4020		LEAR	12	16	0022	S05	W49	12	12.3		A	HSX	40	2	1	3
4020		RAMY	12	16	1310	S07	W57	12	12.3		A	HAX	40	3	1	2
4020		HOLL	12	16	1805	S06	W60	12	12.3		A	AXX		1		4
4020		PALE	12	16	1915	S06	W60	12	12.3			AXX	10	1	1	3
4020		LEAR	12	17	0015	S05	W64	12	12.2		A	HRX	20	1	1	2
4027		MANI	12	11	0123	S03	E22	12	12.7			AXX	10	1		2
4027	23479	MWIL	12	11	1630	S05	E14	12	12.7	4	(B)					
4027		HOLL	12	11	2104	S05	E12	12	12.8		B	BXO	10	4	3	3
4027		RAMY	12	12	1243	S05	W05	12	12.2		B	DAO	40	9	5	4
4027		BOUL	12	12	1615	S04	E01	12	12.8		B	C	30	2	3	2
4027	23479	MWIL	12	12	1630	S05	E01	12	12.8	4	(B)					
4027		RAMY	12	13	1322	S05	W09	12	12.9		B	CAO	20	4	3	4
4027	23479	MWIL	12	13	1545	S05	W11	12	12.8	2	(AF)					
4027		HOLL	12	13	1834	S06	W12	12	12.9		A	AXX	10	2	2	2
4027		HOLL	12	14	1628	S05	W23	12	13.0		A	AXX		0		3
4027		LEAR	12	15	0131	S05	W33	12	12.6		B	BXO		3	3	2
4021		RAMY	12	06	1506	S17	E79	12	12.6		A	HSX	30	1	2	2
4021		HOLL	12	06	1545	S17	E79	12	12.7		A	HSX	100	1	1	4
4021	23469	MWIL	12	06	1630	S16	E79	12	12.7	3	(AP)					
4021		BOUL	12	06	1735	S17	E78	12	12.7		A	HSX	30	1	1	1
4021		MANI	12	07	0015	S17	E76	12	12.8			HSX	200	1	2	3
4021		LEAR	12	07	0115	S16	E75	12	12.7		A	HSX	100	1	1	3
4021		RAMY	12	07	1422	S17	E67	12	12.7		B	DKO	390	8	6	2
4021	23469	MWIL	12	07	1600	S16	E68	12	12.8	4	BP					
4021		HOLL	12	07	1906	S16	E68	12	13.0		B	DSO	230	17	8	3
4021		PALE	12	07	2020	S16	E67	12	12.9			DKO	370	7	7	2
4021		LEAR	12	08	0119	S16	E64	12	12.9		B	DKO	410	8	10	3
4021		RAMY	12	08	1222	S17	E56	12	12.8		BG	DKO	670	25	10	3
4021		LEAR	12	09	0042	S16	E50	12	12.8		B	DHI	730	25	9	2
4021		RAMY	12	09	1730	S17	E42	12	12.9		BG	EKO	830	21	13	3
4021		BOUL	12	09	1755	S15	E40	12	12.8		BG	EHO	700	30	10	2

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4021		LEAR	12	10	0038	S15	E37	12	12.8		B	EHO	890	14	11	3
4021		RAMY	12	10	1405	S15	E29	12	12.8		BG	EKO	790	26	14	3
4021	23469	MWIL	12	10	1600	S16	E29	12	12.9	5	(B)					
4021		LEAR	12	11	0006	S16	E24	12	12.8		B	EKI	1000	28	11	3
4021		MANI	12	11	0123	S15	E23	12	12.8			EKC	900	30	11	2
4021		RAMY	12	11	1350	S17	E18	12	12.9		BG	EKO	920	32	12	3
4021	23469	MWIL	12	11	1630	S17	E15	12	12.8	6	(BY)					
4021		PALE	12	11	1900	S17	E13	12	12.8		BG	EKI	1200	31	12	3
4021		HOLL	12	11	2104	S15	E13	12	12.9		BG	EHI	1010	31	11	3
4021		MANI	12	11	2342	S16	E11	12	12.8			EKI	1140	28	12	3
4021		LEAR	12	12	0130	S16	E12	12	13.0		B	DKI	990	38	10	3
4021		RAMY	12	12	1243	S17	E05	12	12.9		BG	EKI	830	54	12	4
4021		BOUL	12	12	1615	S15	E03	12	12.9		B	EKO	810	13	11	2
4021	23469	MWIL	12	12	1630	S17	E04	12	13.0	5	(B)					
4021		LEAR	12	13	0100	S16	W02	12	12.9		B	DKO	970	27	10	2
4021		RAMY	12	13	1322	S17	W09	12	12.9		BG	EKI	930	51	13	4
4021	23469	MWIL	12	13	1545	S17	W10	12	12.9	5	(B)					
4021		HOLL	12	13	1834	S15	W12	12	12.9		B	EKO	960	49	11	2
4021		PALE	12	13	2000	S17	W12	12	12.9		B	EKO	770	33	12	2
4021		LEAR	12	14	0341	S16	W18	12	12.8		B	EKO	700	26	12	2
4021		MANI	12	14	0400	S17	W17	12	12.9			EKO	860	26	12	3
4021		RAMY	12	14	1259	S17	W23	12	12.8		BGD	EKI	820	53	13	4
4021		HOLL	12	14	1628	S16	W24	12	12.9		B	EKO	790	40	13	3
4021		PALE	12	14	1933	S16	W26	12	12.8		B	EKO	720	25	13	3
4021		LEAR	12	15	0131	S17	W30	12	12.8		B	EKI	730	30	11	2
4021		HOLL	12	15	1537	S17	W37	12	12.8		B	EKI	660	26	11	3
4021		PALE	12	15	2008	S16	W39	12	12.9		B	EKI	430	24	11	4
4021		MANI	12	16	0015	S16	W42	12	12.8			DKI	670	15	10	3
4021		LEAR	12	16	0022	S15	W42	12	12.8		BD	EKI	800	24	11	3
4021		RAMY	12	16	1310	S18	W48	12	12.9		B	DKI	560	25	10	2
4021		BOUL	12	16	1528	S13	W50	12	12.9		B	DSO	270	5	10	1
4021		HOLL	12	16	1805	S16	W51	12	12.9		BG	EKI	610	17	11	4
4021		PALE	12	16	1915	S17	W52	12	12.8			EKI	560	20	11	3
4021		LEAR	12	17	0015	S15	W55	12	12.8		B	DHI	620	21	10	2
4021		RAMY	12	17	1245	S15	W62	12	12.8		BG	DKO	800	18	8	3
4021		HOLL	12	17	1621	S17	W63	12	12.9		B	DKI	430	11	10	3
4021		LEAR	12	18	0318	S16	W70	12	12.8		B	DHI	600	5	7	2
4021		HOLL	12	18	1730	S16	W81	12	12.6		BG	EKI	620	6	11	3
4021		PALE	12	18	1910	S17	W82	12	12.6			EKI	250	6	12	3
4021		LEAR	12	19	0118	S16	W85	12	12.6		A	HKX	220	1	5	3
4022		RAMY	12	07	1422	N10	E85	12	14.0		B	EKI	1240	7	12	2
4022	23472	MWIL	12	07	1600	N11	E80	12	13.7	3	B					
4022		HOLL	12	07	1906	N11	E80	12	13.8		B	EKO	1010	7	15	3
4022		PALE	12	07	2020	N12	E82	12	14.0			DAO	530	4	10	2
4022		LEAR	12	08	0119	N12	E75	12	13.7		B	DKO	1170	10	9	3
4022		RAMY	12	08	1222	N10	E70	12	13.8		B	EKO	910	26	13	3
4022		LEAR	12	09	0042	N12	E64	12	13.9		BD	EKI	1140	27	11	2
4022		RAMY	12	09	1730	N12	E58	12	14.1		B	EKI	970	43	14	3
4022		BOUL	12	09	1755	N12	E55	12	13.9		GD	EAC	900	38	12	2
4022		LEAR	12	10	0038	N11	E51	12	13.9		BGD	EKI	1140	30	13	3
4022		RAMY	12	10	1405	N13	E45	12	14.0		GD	EKO	910	41	14	3
4022	23472	MWIL	12	10	1600	N12	E43	12	13.9	5	(D)					
4022		LEAR	12	11	0006	N12	E38	12	13.9		BGD	EKI	840	41	13	3
4022		MANI	12	11	0123	N12	E37	12	13.8			EKC	900	48	11	2
4022		RAMY	12	11	1350	N11	E32	12	14.0		BGD	EKO	590	37	13	3
4022	23472	MWIL	12	11	1630	N11	E30	12	13.9	5	(D)					
4022		PALE	12	11	1900	N12	E28	12	13.9		BGD	EKI	820	62	12	3
4022		HOLL	12	11	2104	N12	E26	12	13.8		GD	EKI	650	44	12	3
4022		MANI	12	11	2342	N12	E24	12	13.8			EKI	780	43	12	3
4022		LEAR	12	12	0130	N12	E24	12	13.9		BGD	EKI	640	63	13	3
4022		BOUL	12	12	1615	N11	E15	12	13.8		BGD	EKI	400	30	11	2
4022	23472	MWIL	12	12	1630	N10	E16	12	13.9	6	(D)					
4022		LEAR	12	13	0100	N12	E11	12	13.9		BGD	EKC	520	51	12	2
4022		RAMY	12	13	1322	N10	E06	12	14.0		BGD	FKI	420	69	17	4
4022	23472	MWIL	12	13	1545	N11	E03	12	13.9	5	(D)					
4022		HOLL	12	13	1834	N10	E02	12	13.9		BD	EKI	600	39	15	2
4022		PALE	12	13	2000	N11	E02	12	14.0		BGD	EKI	540	40	13	2
4022		LEAR	12	14	0341	N11	W04	12	13.9		BGD	EHO	460	21	11	2
4022		MANI	12	14	0400	N12	W05	12	13.8			EKI	400	23	12	3
4022		RAMY	12	14	1259	N10	W08	12	13.9		BGD	FKI	420	55	17	4

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4022		HOLL	12	14	1628	N11	W09	12	14.0		BD	EKI	420	23	14	3
4022		PALE	12	14	1933	N12	W12	12	13.9		BD	EKI	370	28	11	3
4022		LEAR	12	15	0131	N11	W15	12	13.9		BD	EKO	400	43	11	2
4022		HOLL	12	15	1537	N10	W25	12	13.8		BD	EKO	470	27	14	3
4022		PALE	12	15	2008	N10	W25	12	14.0		G	CKO	340	6	10	4
4022		MANI	12	16	0015	N11	W27	12	14.0			CHO	390	8	9	3
4022		LEAR	12	16	0022	N11	W26	12	14.1		BD	EKI	450	20	10	3
4022		RAMY	12	16	1310	N09	W34	12	14.0		BD	CKO	320	11	8	2
4022		BOUL	12	16	1528	N12	W33	12	14.2		A	HSX	180	3	2	1
4022		HOLL	12	16	1805	N09	W38	12	13.9		BD	CHO	410	13	10	4
4022		PALE	12	16	1915	N10	W38	12	13.9			CKO	360	12	8	3
4022		LEAR	12	17	0015	N10	W41	12	13.9		BD	DKI	440	9	10	2
4022		RAMY	12	17	1245	N10	W43	12	14.3		BD	CKO	400	11	5	3
4022		HOLL	12	17	1621	N09	W47	12	14.2		BD	DKI	380	7	5	3
4022		LEAR	12	18	0318	N10	W53	12	14.2		BD	DHI	440	8	5	2
4022		HOLL	12	18	1730	N10	W61	12	14.1		BD	DKC	660	4	4	3
4022		PALE	12	18	1910	N10	W61	12	14.2			DKO	520	3	5	3
4022		LEAR	12	19	0118	N09	W66	12	14.1		BD	DHI	400	11	5	3
4022		MANI	12	19	0750	N11	W69	12	14.1			DKO	480	5	5	3
4022		RAMY	12	19	1232	N11	W72	12	14.1		BD	DKO	550	6	5	2
4022		HOLL	12	19	1524	N09	W75	12	14.0		BD	DKI	290	6	7	3
4022	23472	MWIL	12	19	1600	N10	W73	12	14.2	5	(AP)					
4022		BOUL	12	19	1805	N10	W73	12	14.3		B	DHO	510	4	9	1
4022		LEAR	12	20	0018	N09	W79	12	14.1		BD	DHI	360	6	6	3
	23483	MWIL	12	12	1630	N18	E22	12	14.4	2	(AP)					
4024		LEAR	12	09	0042	S06	E75	12	14.6		B	CSO	100	3	7	2
4024		BOUL	12	09	1755	S06	E66	12	14.7		B	CSO	180	6	7	2
4024		LEAR	12	10	0038	S06	E62	12	14.7		B	CSO	120	3	8	3
4024		RAMY	12	10	1405	S07	E56	12	14.8		B	CAO	80	3	8	3
4024	23474	MWIL	12	10	1600	S06	E55	12	14.8	4	(AP)					
4024		LEAR	12	11	0006	S07	E50	12	14.8		B	CAO	140	6	7	3
4024		MANI	12	11	0123	S05	E49	12	14.7			CSO	100	9	9	2
4024		RAMY	12	11	1350	S07	E43	12	14.8		B	CAO	110	7	8	3
4024	23474	MWIL	12	11	1630	S07	E44	12	15.0	5	(AP)					
4024		PALE	12	11	1900	S07	E39	12	14.7		B	CHO	160	8	8	3
4024		HOLL	12	11	2104	S07	E37	12	14.7		B	CSO	120	6	9	3
4024		MANI	12	11	2342	S07	E37	12	14.8			CSO	120	6	9	3
4024		LEAR	12	12	0130	S07	E36	12	14.8		B	CSO	120	11	7	3
4024		RAMY	12	12	1243	S07	E29	12	14.7		B	CSO	90	13	7	4
4024		BOUL	12	12	1615	S07	E25	12	14.6		B	CSO	110	9	8	2
4024	23474	MWIL	12	12	1630	S08	E28	12	14.8	4	(AP)					
4024		LEAR	12	13	0100	S07	E23	12	14.8		B	CAO	80	4	6	2
4024		RAMY	12	13	1322	S08	E18	12	14.9		B	DKO	50	9	3	4
4024	23474	MWIL	12	13	1545	S07	E18	12	15.0	3	(BP)					
4024		HOLL	12	13	1834	S06	E17	12	15.0		B	CSO	50	5	6	2
4024		PALE	12	13	2000	S07	E15	12	15.0		B	CSO	50	3	2	2
4024		LEAR	12	14	0341	S06	E11	12	15.0		B	CRO	40	14	9	2
4024		MANI	12	14	0400	S07	E09	12	14.8			CSO	60	6	5	3
4024		RAMY	12	14	1259	S08	E07	12	15.1		B	CAO	40	13	8	4
4024		HOLL	12	14	1628	S06	W00	12	14.7		B	CRO	30	11	8	3
4024		PALE	12	14	1933	S09	E02	12	15.0		B	CAO	20	5	4	3
4024		LEAR	12	15	0131	S07	W03	12	14.8		B	CRO	20	9	6	2
4024		HOLL	12	15	1537	S05	W08	12	15.1		B	BXO	20	6	6	3
4024		PALE	12	15	2008	S06	W10	12	15.1		B	BXO	20	8	6	4
4024		MANI	12	16	0015	S06	W12	12	15.1			BXO	10	10	6	3
4024		LEAR	12	16	0022	S05	W13	12	15.0		B	CRO	40	13	6	3
4024		HOLL	12	16	1805	S07	W23	12	15.0		B	BXO	10	3	4	4
4024		LEAR	12	17	0015	S06	W26	12	15.1		B	BXO	10	3	3	2
4024		LEAR	12	18	0318	S07	W40	12	15.1		A	AXX	10	1		2
0004	23480	MWIL	12	11	1630	S18	E49	12	15.4	2	(B)					
0004		RAMY	12	13	1322	S18	E21	12	15.2		A	AXX	10	1	1	4
4025		BOUL	12	09	1755	S06	E86	12	16.2		B	DAO	240	4	7	2
4025		LEAR	12	10	0038	S07	E78	12	15.9		B	DHI	290	2	8	3
4025		RAMY	12	10	1405	S07	E72	12	16.0		B	DAO	310	10	5	3
4025	23475	MWIL	12	10	1600	S08	E77	12	16.4	4	(B)					
4025		LEAR	12	11	0006	S09	E71	12	16.3		BG	FKO	770	11	16	3
4025		MANI	12	11	0123	S06	E69	12	16.2			DKI	490	4	5	2

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NOAA/ USAF Region	Mt Wilson Region	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
4025		RAMY	12	11	1350	S10	E66	12	16.5		BG	FAO	800	13	20	3
4025	23475	MWIL	12	11	1630	S07	E58	12	16.0	6	(D)					
4025		PALE	12	11	1900	S09	E62	12	16.4		BG	FAO	560	17	17	3
4025		HOLL	12	11	2104	S07	E55	12	16.0		BD	DKO	330	9	6	3
4025		MANI	12	11	2342	S06	E55	12	16.1			DKI	520	6	6	3
4025		LEAR	12	12	0130	S07	E53	12	16.0		B	DAO	400	8	4	3
4025		RAMY	12	12	1243	S06	E47	12	16.0		BD	CKO	390	9	4	4
4025		BOUL	12	12	1615	S08	E44	12	16.0		BD	DKO	420	7	4	2
4025	23475	MWIL	12	12	1630	S07	E44	12	16.0	5	(D)					
4025		LEAR	12	13	0100	S07	E39	12	16.0		BD	DKC	360	12	4	2
4025		RAMY	12	13	1322	S06	E34	12	16.1		B	DKO	300	1	6	4
4025	23475	MWIL	12	13	1545	S07	E30	12	15.9	5	(BP)					
4025		HOLL	12	13	1834	S06	E30	12	16.0		B	DSO	320	12	5	2
4025		PALE	12	13	2000	S06	E30	12	16.1		B	DKO	320	3	4	2
4025		LEAR	12	14	0341	S06	E25	12	16.0		B	DAC	360	5	5	2
4025		MANI	12	14	0400	S06	E24	12	16.0			DKO	310	5	5	3
4025		RAMY	12	14	1259	S08	E19	12	16.0		B	DKI	390	25	8	4
4025		HOLL	12	14	1628	S06	E16	12	15.9		B	DSO	400	16	7	3
4025		PALE	12	14	1933	S07	E16	12	16.0		B	DKO	340	8	5	3
4025		LEAR	12	15	0131	S07	E12	12	16.0		B	DHC	380	13	5	2
4025		HOLL	12	15	1537	S07	E04	12	16.0		B	DKO	500	21	9	3
4025		PALE	12	15	2008	S08	E04	12	16.1		B	DKO	560	19	8	4
4025		MANI	12	16	0015	S08	E01	12	16.1			DKI	450	16	8	3
4025		LEAR	12	16	0022	S07	E01	12	16.1		BD	DKI	530	24	8	3
4025		RAMY	12	16	1310	S08	W06	12	16.1		BG	DKO	360	31	10	2
4025		BOUL	12	16	1528	S05	W08	12	16.0		BD	DKI	220	5	7	1
4025		HOLL	12	16	1805	S06	W09	12	16.1		BGD	EKI	430	28	11	4
4025		PALE	12	16	1915	S07	W09	12	16.1			DKI	450	27	10	3
4025		LEAR	12	17	0015	S06	W14	12	16.0		BD	DKI	540	30	9	2
4025		RAMY	12	17	1245	S06	W18	12	16.2		BGD	DKI	440	37	9	3
4025		HOLL	12	17	1621	S07	W12	12	16.8		BD	DKI	500	21	10	3
4025		LEAR	12	18	0318	S06	W27	12	16.1		BGD	DKI	480	17	9	2
4025		HOLL	12	18	1730	S06	W36	12	16.0		BGD	EKI	450	15	11	3
4025		PALE	12	18	1910	S07	W36	12	16.1			DKI	330	18	9	3
4025		LEAR	12	19	0118	S07	W39	12	16.1		BGD	DKO	310	12	7	3
4025		MANI	12	19	0750	S07	W43	12	16.1			DKO	360	9	8	3
4025		RAMY	12	19	1232	S07	W45	12	16.1		BGD	CKO	330	14	9	2
4025		HOLL	12	19	1524	S07	W46	12	16.2		BGD	DKI	320	13	9	3
4025	23475	MWIL	12	19	1600	S07	W48	12	16.1	5	(D)					
4025		BOUL	12	19	1805	S07	W47	12	16.2		BG	CKO	220	6	8	1
4025		LEAR	12	20	0018	S08	W52	12	16.1		BD	DKO	310	10	7	3
4025		HOLL	12	20	1548	S08	W61	12	16.1		BGD	DKI	300	10	9	3
4025	23475	MWIL	12	20	1615	S09	W60	12	16.2	4	(D)					
4025		BOUL	12	20	1715	S06	W59	12	16.3		BGD	CAO	320	12	10	2
4025		RAMY	12	20	1905	S06	W62	12	16.2		BGD	CAO	230	10	10	2
4025		MANI	12	20	2343	S07	W65	12	16.1			CAO	380	10	10	3
4025		LEAR	12	21	0042	S08	W66	12	16.1		BD	DKO	260	10	8	3
4025		RAMY	12	21	1715	S06	W77	12	16.0		BD	CKO	190	4	4	2
4025		HOLL	12	21	1720	S08	W78	12	15.9		BD	DHI	110	3	5	3
4025		PALE	12	21	1937	S07	W79	12	15.9		A	HKX	170	2	4	4
4025		MANI	12	21	2337	S07	W74	12	16.4			HAX	150	2	5	2
4025		LEAR	12	22	0139	S08	W80	12	16.1		BD	CHI	170	3	4	3
0005	23476	MWIL	12	10	1600	S13	E79	12	16.6	2	(AP)					
0005		MANI	12	11	0123	S12	E78	12	16.9			HRX	20	2	2	2
0005	23476	MWIL	12	11	1630	S14	E65	12	16.6	4	(AP)					
0005		MANI	12	11	2342	S13	E63	12	16.7			HRX	20	1	1	3
0005	23476	MWIL	12	12	1630	S14	E52	12	16.6	4	(AP)					
0005	23476	MWIL	12	13	1545	S13	E39	12	16.6	2	(AP)					
4026		RAMY	12	10	1405	S09	E85	12	17.0		B	CAO	130	4	5	3
4026		MANI	12	11	0123	S07	E80	12	17.1			DKI	420	5	3	2
4026	23481	MWIL	12	11	1630	S10	E70	12	17.0	5	(D)					
4026		HOLL	12	11	2104	S12	E67	12	16.9		BD	DKI	700	13	9	3
4026		MANI	12	11	2342	S10	E67	12	17.0			DKI	670	10	7	3
4026		LEAR	12	12	0130	S11	E63	12	16.8		BGD	DKC	830	18	8	3
4026		RAMY	12	12	1243	S10	E48	12	16.1		BD	DKO	630	24	9	4
4026		BOUL	12	12	1615	S11	E58	12	17.0		BD	DAO	390	12	7	2
4026	23481	MWIL	12	12	1630	S10	E57	12	17.0	5	(D)					
4026		LEAR	12	13	0100	S11	E51	12	16.9		BGD	DKI	430	19	6	2
4026		RAMY	12	13	1322	S11	E45	12	16.9		BGD	DKO	390	26	9	4

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NOAA/ USAF Region	Mt Wilson Region	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4026	23481	MWIL	12	13	1545	S11	E42	12	16.8	5	(D)					
4026		HOLL	12	13	1834	S11	E40	12	16.8		BGD	DKI	410	13	8	2
4026		PALE	12	13	2000	S10	E41	12	16.9		BGD	DAO	350	11	9	2
4026		LEAR	12	14	0341	S11	E35	12	16.8		BGD	DKI	370	24	6	2
4026		MANI	12	14	0400	S11	E35	12	16.8			DAO	390	17	9	3
4026		RAMY	12	14	1259	S11	E32	12	17.0		BGD	DKI	420	34	9	4
4026		HOLL	12	14	1628	S11	E28	12	16.8		BGD	DKI	400	27	8	3
4026		PALE	12	14	1933	S12	E28	12	16.9		BGD	DAI	310	24	7	3
4026		LEAR	12	15	0131	S11	E23	12	16.8		BGD	DKI	330	27	7	2
4026		HOLL	12	15	1537	S11	E16	12	16.9		BGD	DKI	310	32	10	3
4026		PALE	12	15	2008	S12	E15	12	17.0		BGD	DAO	220	19	5	4
4026		MANI	12	16	0015	S11	E12	12	16.9			DAI	290	26	8	3
4026		LEAR	12	16	0022	S11	E11	12	16.8		BGD	DAI	360	23	7	3
4026		RAMY	12	16	1310	S14	E06	12	17.0		BGD	DAI	200	38	8	2
4026		BOUL	12	16	1528	S12	E03	12	16.9		BGD	DKO	290	5	10	1
4026		HOLL	12	16	1805	S12	E03	12	17.0		BGD	EKI	280	34	11	4
4026		PALE	12	16	1915	S13	E03	12	17.0			DKI	260	30	8	3
4026		LEAR	12	17	0015	S11	W02	12	16.9		BGD	DKI	290	26	8	2
4026		RAMY	12	17	1245	S13	W07	12	17.0		BGD	DAI	140	46	7	3
4026		HOLL	12	17	1621	S12	W09	12	17.0		BG	EAI	280	36	12	3
4026		LEAR	12	18	0318	S13	W16	12	16.9		BGD	DAI	310	34	7	2
4026		HOLL	12	18	1730	S12	W23	12	17.0		BGD	EAI	170	28	14	3
4026		PALE	12	18	1910	S13	W23	12	17.1			EAI	140	26	12	3
4026		LEAR	12	19	0118	S12	W28	12	16.9		BG	DSI	130	20	7	3
4026		MANI	12	19	0750	S10	W31	12	17.0			CAO	50	16	8	3
4026		RAMY	12	19	1232	S11	W35	12	16.9		BGD	CAO	130	18	8	2
4026		HOLL	12	19	1524	S10	W36	12	16.9		B	CRO	50	12	5	3
4026	23481	MWIL	12	19	1600	S09	W37	12	16.9	4	(B)					
4026		BOUL	12	19	1805	S08	W37	12	17.0		B	BXO	30	4	4	1
4026		LEAR	12	20	0018	S11	W41	12	16.9		B	DRO	30	7	5	3
4026		HOLL	12	20	1548	S09	W50	12	16.9		B	BXO	10	2	1	3
4026	23481	MWIL	12	20	1615	S10	W50	12	16.9	2	(B)					
4026		BOUL	12	20	1715	S08	W49	12	17.0		B	BXO	10	3	2	2
4026		RAMY	12	20	1905	S07	W52	12	16.9		B	BXO	20	2	1	2
4026		MANI	12	20	2343	S08	W55	12	16.9			BXO	10	2	1	3
4026		LEAR	12	21	0042	S09	W54	12	17.0		B	BXO		2	3	3
4026		RAMY	12	21	1715	S07	W64	12	16.9		B	BXO	20	4	3	2
4026		PALE	12	21	1937	S09	W66	12	16.9		A	AXX	10	1	1	4
4026		MANI	12	21	2337	S08	W68	12	16.9			AXX	10	1		2
4026		LEAR	12	22	0139	S09	W68	12	17.0		A	AXX		1		3
4034	23487	MWIL	12	20	1615	N16	W42	12	17.5	3	(AF)					
4034		RAMY	12	20	1905	N16	W45	12	17.4		B	BXO	20	2	2	2
4034		LEAR	12	21	0042	N16	W49	12	17.3		B	CRO	20	3	3	3
4034		RAMY	12	21	1715	N16	W59	12	17.2		B	CAO	40	2	5	2
4034		HOLL	12	21	1720	N15	W58	12	17.3		B	BXO	10	2	5	3
4034		PALE	12	21	1937	N15	W63	12	17.0		A	AXX	10	1	1	4
4034		LEAR	12	22	0139	N15	W63	12	17.3		B	BXO		2	5	3
4034		HOLL	12	22	1612	N13	W74	12	17.1		A	AXX		1		3
4035		MANI	12	20	2343	S03	W13	12	20.0			BXO	10	4	3	3
4035		RAMY	12	21	1715	S03	W23	12	20.0		B	DAO	40	14	5	2
4035		HOLL	12	21	1720	S03	W23	12	20.0		B	BXO	40	10	5	3
4035		PALE	12	21	1937	S03	W24	12	20.0			CRO	30	8	5	4
4035		MANI	12	21	2337	S03	W27	12	20.0			DRO	60	8	5	2
4035		LEAR	12	22	0139	S04	W28	12	20.0		B	DRO	30	13	5	3
4035		HOLL	12	22	1612	S03	W37	12	19.9		B	BXO	70	15	6	3
4035		PALE	12	22	1845	S03	W37	12	20.0		B	BXO	70	11	6	4
4035		LEAR	12	23	0123	S03	W42	12	19.9		B	BXO	70	13	6	3
4035		MANI	12	23	0149	S03	W42	12	19.9			CRO	70	9	6	2
4035		BOUL	12	23	1700	S03	W51	12	19.9		B	BXO	10	4	5	1
4035	23489	MWIL	12	23	1700	S04	W49	12	20.0	3	(BP)					
4035		RAMY	12	23	1725	S04	W50	12	20.0		B	BXO	70	9	7	2
4035		LEAR	12	24	0047	S03	W55	12	19.9		B	BXO	20	9	6	4
4035		MANI	12	24	0215	S03	W55	12	20.0			BXO	30	4	4	2
4029		RAMY	12	14	1259	S04	E87	12	21.0		A	HAX	90	1	3	4
4029		HOLL	12	14	1628	S05	E85	12	21.0		A	HSX	40	1	2	3
4029		PALE	12	14	1933	S06	E85	12	21.2		A	HSX	20	1	1	3
4029		LEAR	12	15	0131	S05	E78	12	20.9		A	HSX	40	1	1	2
4029		HOLL	12	15	1537	S04	E71	12	21.0		A	HSX	20	1	2	3

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4029		PALE	12 15 2008	S06 E70	12 21.1		A	HSX	60	1	1	4
4029		MANI	12 16 0015	S06 E67	12 21.0			BXO	80	1	2	3
4029		LEAR	12 16 0022	S06 E66	12 21.0		A	HSX	30	1	1	3
4029		RAMY	12 16 1310	S06 E60	12 21.0		A	HAX	40	1	1	2
4029		BOUL	12 16 1528	S06 E57	12 20.9		A	HRX	10	1	1	1
4029		HOLL	12 16 1805	S04 E57	12 21.0		A	HSX	40	1	1	4
4029		PALE	12 16 1915	S05 E57	12 21.1			HAX	30	1	1	3
4029		LEAR	12 17 0015	S06 E53	12 21.0		A	HSX	40	1	1	2
4029		RAMY	12 17 1245	S06 E46	12 21.0		A	HAX	30	2	1	3
4029		HOLL	12 17 1621	S05 E44	12 21.0		A	HSX	30	1	1	3
4029		LEAR	12 18 0318	S06 E38	12 21.0		A	HSX	40	2	1	2
4029		HOLL	12 18 1730	S05 E32	12 21.1		A	HSX	30	2	2	3
4029		PALE	12 18 1910	S06 E31	12 21.1			CSO	20	3	2	3
4029		LEAR	12 19 0118	S05 E26	12 21.0		B	CRO	10	2	1	3
4029		MANI	12 19 0750	S05 E23	12 21.0			CSO	20	2	2	3
4029		RAMY	12 19 1232	S05 E21	12 21.1		A	HAX	40	2	2	2
4029		HOLL	12 19 1524	S05 E19	12 21.1		A	AXX	10	3	2	3
4029	23485	MWIL	12 19 1600	S06 E19	12 21.1	4	(AP)					
4029		BOUL	12 19 1805	S05 E19	12 21.2		A	AXO	10	2	1	1
4029		LEAR	12 20 0018	S06 E14	12 21.1		A	HRX	10	1	1	3
4029		HOLL	12 20 1548	S05 E04	12 21.0		B	BXO		2	4	3
4029	23485	MWIL	12 20 1615	S05 E04	12 21.0	3	(AP)					
4029		BOUL	12 20 1715	S05 E05	12 21.1		A	AXX	10	1	1	2
4029		RAMY	12 20 1905	S06 E03	12 21.0		A	AXX	10	1	1	2
4029		MANI	12 20 2343	S06 E01	12 21.1			AXX		1		3
4029		LEAR	12 21 0042	S06 E01	12 21.1		A	AXX		1		3
4029		HOLL	12 22 1612	S07 W19	12 21.3		A	AXX	10	3	2	3
4029		PALE	12 22 1845	S07 W21	12 21.2		A	AXX	10	2	2	4
4029		RAMY	12 23 1725	S06 W33	12 21.3		B	BXO	30	5	4	2
4030		HOLL	12 15 1537	N11 E78	12 21.5		A	HSX	30	1	2	3
4030		PALE	12 15 2008	N09 E77	12 21.6		A	HRX	20	1	1	4
4030		MANI	12 16 0015	N10 E75	12 21.6			HSX	70	1	1	3
4030		LEAR	12 16 0022	N10 E73	12 21.5		A	HSX	20	1	1	3
4030		RAMY	12 16 1310	N09 E68	12 21.7		A	HAX	50	1	1	2
4030		BOUL	12 16 1528	N12 E63	12 21.4		A	HSX	20	1	1	1
4030		HOLL	12 16 1805	N11 E64	12 21.6		A	HSX	60	1	1	4
4030		PALE	12 16 1915	N10 E64	12 21.6			HSX	30	1	1	3
4030		LEAR	12 17 0015	N10 E58	12 21.4		A	HSX	30	1	1	2
4030		RAMY	12 17 1245	N10 E53	12 21.5		A	HAX	40	2	1	3
4030		HOLL	12 17 1621	N12 E51	12 21.5		A	HSX	20	1	1	3
4030		LEAR	12 18 0318	N10 E45	12 21.5		A	HSX	40	2	1	2
4030		HOLL	12 18 1730	N12 E37	12 21.5		A	HSX	30	1	1	3
4030		PALE	12 18 1910	N10 E37	12 21.6			CSO	30	2	1	3
4030		LEAR	12 19 0118	N11 E33	12 21.5		A	HSX	20	1	1	3
4030		MANI	12 19 0750	N11 E30	12 21.6			AXX	20	2	1	3
4030		RAMY	12 19 1232	N11 E27	12 21.6		A	HAX	20	2	2	2
4030		HOLL	12 19 1524	N12 E26	12 21.6		A	AXX	10	3	2	3
4030		HOLL	12 20 1548	N11 E11	12 21.5		A	AXX		1		3
4036		RAMY	12 21 1715	S19 E13	12 22.7		B	BXO	20	9	5	2
4036		HOLL	12 21 1720	S18 E13	12 22.7		B	BXO	40	9	5	3
4036		PALE	12 21 1937	S19 E13	12 22.8			CRI	40	13	5	4
4036		MANI	12 21 2337	S19 E19	12 23.4			DRO	50	4	3	2
4036		LEAR	12 22 0139	S19 E08	12 22.7		B	CAO	30	12	5	3
4036		HOLL	12 22 1612	S18 E01	12 22.8		B	CRO	70	14	6	3
4036		PALE	12 22 1845	S18 W00	12 22.8		B	CRO	60	10	7	4
4036		LEAR	12 23 0123	S18 W04	12 22.8		B	BXO	70	17	5	3
4036		MANI	12 23 0149	S18 W04	12 22.8			CRO	40	12	6	2
4036		BOUL	12 23 1700	S18 W11	12 22.9		B	CSO	40	5	5	1
4036	23490	MWIL	12 23 1700	S18 W13	12 22.7	4	(B)					
4036		RAMY	12 23 1725	S18 W14	12 22.7		B	DAO	90	8	8	2
4036		LEAR	12 24 0047	S18 W17	12 22.7		B	DAO	110	23	7	4
4036		MANI	12 24 0215	S18 W19	12 22.6			CRO	100	13	6	2
4036	23490	MWIL	12 24 1700	S19 W27	12 22.6	4	(AP)					
4036		MANI	12 25 0016	S18 W31	12 22.6			DSO	120	15	6	3
4036		LEAR	12 26 0008	S19 W44	12 22.6		B	DSO	160	7	8	3
4036		MANI	12 26 0030	S18 W44	12 22.7			DSO	160	12	8	3
4036	23490	MWIL	12 26 1700	S19 W54	12 22.6	3	(B)					
4036		LEAR	12 27 0049	S19 W59	12 22.5		B	DSO	110	4	8	3
4036		MANI	12 27 0100	S19 W58	12 22.6			DSO	160	7	8	3

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4036		RAMY	12	27	1355	S17	W65	12	22.6		B	DAO	150	7	9	3
4036		HOLL	12	27	1624	S19	W67	12	22.6		B	CSO	110	3	7	3
4036	23490	MWIL	12	27	1830	S20	W69	12	22.5	4	BP					
4036		PALE	12	27	2305	S20	W70	12	22.6		B	CSO	120	5	12	2
4036		LEAR	12	28	0031	S19	W71	12	22.6		B	DSO	130	4	6	3
4036	23490	MWIL	12	28	1700	S19	W85	12	22.2	2	(AP)					
4036		HOLL	12	28	1857	S18	W86	12	22.2		A	AXX	20	1	1	3
		PALE	12	22	1845	N14	E03	12	23.0		B	BXO	20	3	3	4
4038		HOLL	12	22	1612	N04	E03	12	22.9		A	AXX	10	2	2	3
4038		PALE	12	22	1845	N07	E03	12	23.0		A	AXX		1		4
4038		LEAR	12	23	0123	N07	W01	12	23.0		B	BXO	20	4	4	3
4038	23491	MWIL	12	23	1700	N07	W09	12	23.0	3	(BP)					
4038		BOUL	12	23	1700	N08	W10	12	23.0		B	BXO	10	4	5	1
4038		RAMY	12	23	1725	N06	W10	12	23.0		B	CRO	30	5	5	2
4038		LEAR	12	24	0047	N07	W14	12	23.0		B	BXO	30	8	5	4
4038		MANI	12	24	0215	N08	W15	12	23.0			BXO	30	7	3	2
4038	23491	MWIL	12	24	1700	N06	W24	12	22.9	4	(B)					
4038		MANI	12	25	0016	N08	W28	12	22.9			CRO	80	15	5	3
4038		LEAR	12	26	0008	N06	W42	12	22.9		B	DSO	130	12	8	3
4038		MANI	12	26	0030	N06	W42	12	22.9			DSO	150	11	8	3
4038		BOUL	12	26	1640	N06	W55	12	22.6		BG	CSO	170	3	9	3
4038	23491	MWIL	12	26	1700	N06	W54	12	22.7	4	(BP)					
4038		PALE	12	26	1834	N05	W53	12	22.8		B	CSO	120	4	5	4
4038		LEAR	12	27	0049	N05	W59	12	22.6		B	DSO	260	6	5	3
4038		MANI	12	27	0100	N06	W58	12	22.7			CSO	190	8	6	3
4038		RAMY	12	27	1355	N07	W58	12	22.5		B	CKO	200	6	4	3
4038		HOLL	12	27	1624	N05	W69	12	22.5		B	CKO	80	3	3	3
4038	23491	MWIL	12	27	1830	N05	W70	12	22.5	4	AP					
4038		PALE	12	27	2305	N06	W73	12	22.5		B	CKO	80	2	4	2
4038		LEAR	12	28	0031	N05	W71	12	22.7		B	CAO	170	6	8	3
4038		BOUL	12	28	1545	N05	W85	12	22.3		A	HSX	90	1	1	2
4038	23491	MWIL	12	28	1700	N05	W84	12	22.4	4	(AP)					
4038		HOLL	12	28	1857	N05	W82	12	22.7		A	HSX	50	1	2	3
4038		MANI	12	29	0028	N05	W79	12	23.1			HHX	380	2	2	3
4038		RAMY	12	29	1255	N07	W85	12	23.2		B	CKO	60	2	10	3
4031		HOLL	12	18	1730	S15	E63	12	23.5		B	DSO	40	3	5	3
4031		PALE	12	18	1910	S16	E63	12	23.6			DSO	30	3	6	3
4031		LEAR	12	19	0118	S17	E57	12	23.4		B	DAO	130	4	6	3
4031		MANI	12	19	0750	S16	E56	12	23.6			DSO	170	4	6	3
4031		RAMY	12	19	1232	S18	E53	12	23.6		B	DHO	390	9	7	2
4031		HOLL	12	19	1524	S16	E51	12	23.5		B	DSO	260	6	7	3
4031	23486	MWIL	12	19	1600	S17	E51	12	23.5	4	(B)					
4031		BOUL	12	19	1805	S15	E50	12	23.5		B	DAO	220	3	6	1
4031		LEAR	12	20	0018	S17	E46	12	23.5		B	DSO	200	4	6	3
4031		HOLL	12	20	1548	S17	E38	12	23.5		B	DAO	190	4	6	3
4031	23486	MWIL	12	20	1615	S17	E37	12	23.5	4	(B)					
4031		BOUL	12	20	1715	S18	E36	12	23.5		B	DSO	110	3	7	2
4031		RAMY	12	20	1905	S18	E35	12	23.5		B	DAO	180	6	7	2
4031		MANI	12	20	2343	S18	E33	12	23.5			DAO	230	5	8	3
4031		LEAR	12	21	0042	S18	E32	12	23.5		B	DSO	200	8	7	3
4031		RAMY	12	21	1715	S18	E24	12	23.5		B	DAO	140	6	7	2
4031		HOLL	12	21	1720	S17	E23	12	23.5		B	DAO	130	9	7	3
4031		PALE	12	21	1937	S18	E23	12	23.6			DAO	130	9	7	4
4031		MANI	12	21	2337	S18	E20	12	23.5			DSO	130	7	7	2
4031		LEAR	12	22	0139	S18	E18	12	23.4		B	DSO	130	13	7	3
4031		HOLL	12	22	1612	S17	E12	12	23.6		B	CSO	110	4	7	3
4031		PALE	12	22	1845	S17	E11	12	23.6		B	C O	100	6	7	4
4031		LEAR	12	23	0123	S18	E06	12	23.5		B	CSO	120	10	7	3
4031		MANI	12	23	0149	S18	E06	12	23.5			CSO	120	7	7	2
4031	23486	MWIL	12	23	1700	S17	W04	12	23.4	4	(BP)					
4031		BOUL	12	23	1700	S17	W05	12	23.3		B	HSX	60	1	2	1
4031		RAMY	12	23	1725	S17	W05	12	23.3		A	HSX	70	3	2	2
4031		LEAR	12	24	0047	S18	W06	12	23.6		B	CSO	110	9	7	4
4031		MANI	12	24	0215	S18	W09	12	23.4			CSO	70	4	4	2
4031	23486	MWIL	12	24	1700	S18	W17	12	23.4	4	(BP)					
4031		MANI	12	25	0016	S18	W21	12	23.4			CSO	40	6	3	3
4031		LEAR	12	26	0008	S18	W33	12	23.5		B	CSO	70	6	5	3
4031		MANI	12	26	0030	S18	W33	12	23.5			CSO	80	7	5	3

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4031		BOUL	12	26	1540	S18	W50	12	22.9		B	ESI	200	6	11	3
4031	23486	MWIL	12	26	1700	S18	W44	12	23.4	4	(AP)					
4031		PALE	12	26	1834	S19	W51	12	22.9		B	ESO	180	6	12	4
4031		LEAR	12	27	0049	S18	W49	12	23.3		A	HSX	40	2	1	3
4031		MANI	12	27	0100	S18	W49	12	23.3			HSX	80	2	2	3
4031		RAMY	12	27	1355	S17	W54	12	23.5		B	DAO	90	7	4	3
4031		HOLL	12	27	1624	S18	W56	12	23.4		B	CSO	40	5	5	3
4031	23486	MWIL	12	27	1830	S20	W57	12	23.4	4	AP					
4031		PALE	12	27	2305	S19	W59	12	23.5		B	CSO	30	3	3	2
4031		LEAR	12	28	0031	S19	W60	12	23.4		B	CSO	40	6	3	3
4031		BOUL	12	28	1545	S20	W68	12	23.5		A	HRX	20	1	1	2
4031	23486	MWIL	12	28	1700	S19	W70	12	23.4	4	(AP)					
4031		HOLL	12	28	1857	S18	W71	12	23.4		A	HSX	60	1	2	3
4031		MANI	12	29	0028	S18	W77	12	23.2			HSX	80	1	2	3
4031		LEAR	12	29	0035	S19	W76	12	23.2		A	HSX	80	1	1	2
4031		RAMY	12	29	1255	S19	W82	12	23.3		A	HAX	60	1	5	3
4031		HOLL	12	29	1555	S18	W82	12	23.4		A	HSX	30	1	2	4
4031		MANI	12	29	2336	S18	W89	12	23.2			AXX	70	1		3
4032		HOLL	12	19	1524	N08	E57	12	23.9		A	AXX		1		3
4032		LEAR	12	20	0018	N07	E35	12	22.6		A	AXX		1		3
4032		HOLL	12	20	1548	N08	E43	12	23.9		B	CRO	20	3	3	3
4032	23488	MWIL	12	20	1615	N09	E42	12	23.8	3	(B)					
4032		BOUL	12	20	1715	N08	E42	12	23.9		B	BXO	20	4	4	2
4032		RAMY	12	20	1905	N07	E41	12	23.9		B	DAO	30	5	4	2
4032		MANI	12	20	2343	N08	E38	12	23.8			DRO	40	6	4	3
4032		LEAR	12	21	0042	N08	E38	12	23.9		B	DRO	30	4	4	3
4032		RAMY	12	21	1715	N08	E29	12	23.9		B	BXO	10	3	4	2
4032		HOLL	12	21	1720	N09	E28	12	23.8		B	BXO	20	4	4	3
4032		PALE	12	21	1937	N08	E27	12	23.8		B	BXO	20	4	5	4
4032		MANI	12	21	2337	N08	E25	12	23.9			BXO	10	6	4	2
4032		LEAR	12	22	0139	N08	E23	12	23.8		B	BXO	10	5	5	3
4032		HOLL	12	22	1612	N08	E15	12	23.8		B	BXO	10	3	5	3
4032		PALE	12	22	1845	N08	E13	12	23.8		A	AXX	10	2	2	4
4032		LEAR	12	23	0123	N08	E09	12	23.7		B	BXO	20	6	6	3
4032		MANI	12	23	0149	N08	E09	12	23.8			BXO	20	3	4	2
4032	23488	MWIL	12	23	1700	N09	E01	12	23.8	3	(B)					
4032		BOUL	12	23	1700	N09	W00	12	23.7		B	BXO	10	5	4	1
4032		RAMY	12	23	1725	N09	E00	12	23.7		B	CRO	30	5	4	2
4032		LEAR	12	24	0047	N08	W04	12	23.7		B	BXO	30	7	5	4
4032		MANI	12	24	0215	N08	W05	12	23.7			BXO	30	5	4	2
4032	23488	MWIL	12	24	1700	N09	W13	12	23.7	4	(B)					
4032		MANI	12	25	0016	N08	W18	12	23.7			DRO	80	9	4	3
4032		LEAR	12	26	0008	N09	W31	12	23.7		B	DSO	130	15	8	3
4032		MANI	12	26	0030	N10	W31	12	23.7			DSO	150	15	8	3
4032		BOUL	12	26	1640	N09	W40	12	23.7		B	CSO	130	6	9	3
4032	23488	MWIL	12	26	1700	N08	W44	12	23.4	5	(B)					
4032		PALE	12	26	1834	N09	W42	12	23.6		B	CSO	120	11	11	4
4032		LEAR	12	27	0049	N09	W47	12	23.5		B	DAO	160	10	10	3
4032		MANI	12	27	0100	N09	W46	12	23.6			ESO	190	17	12	3
4032		RAMY	12	27	1355	N12	W56	12	23.4		B	EKO	240	16	11	3
4032		HOLL	12	27	1624	N09	W54	12	23.6		B	CSO	200	12	11	3
4032	23488	MWIL	12	27	1830	N08	W57	12	23.5	5	B					
4032		PALE	12	27	2305	N08	W58	12	23.6		B	DSO	260	11	9	2
4032		LEAR	12	28	0031	N09	W59	12	23.6		B	DSO	260	10	10	3
4032		BOUL	12	28	1545	N08	W67	12	23.6		B	DSO	180	2	8	2
4032	23489	MWIL	12	28	1700	N08	W69	12	23.5	5	(B)					
4032		HOLL	12	28	1857	N08	W69	12	23.6		B	DSO	390	3	10	3
4032		MANI	12	29	0028	N08	W71	12	23.7			HSX	40	1	1	3
4032		LEAR	12	29	0035	N09	W74	12	23.5		B	DSO	330	4	11	2
4032		RAMY	12	29	1255	N10	W75	12	23.9		A	HAX	60	1	2	3
4032		BOUL	12	29	1440	N08	W82	12	23.5		B	DSO	180	2	9	2
4032		HOLL	12	29	1555	N10	W82	12	23.5		B	CSO	40	3	9	4
4032		PALE	12	29	1930	N09	W82	12	23.7		A	HSX	20	1	2	3
4032		MANI	12	29	2336	N08	W83	12	23.8			AXX	30	1		3
	23498	MWIL	12	31	1630	S16	W52	12	27.7	2	(AP)					
4033		RAMY	12	21	1715	S15	E81	12	27.9		B	CKO	250	5	10	2
4033		HOLL	12	21	1720	S13	E82	12	27.9		B	EKI	390	3	11	3
4033		PALE	12	21	1937	S13	E84	12	28.2			EAO	300	7	12	4

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4033		MANI	12	21	2337	S13	E80	12	28.0			EKI	990	4	12	2
4033		LEAR	12	22	0139	S15	E78	12	28.0		B	EKI	580	12	14	3
4033		HOLL	12	22	1612	S14	E70	12	28.0		BG	EKI	580	20	17	3
4033		PALE	12	22	1845	S14	E70	12	28.1		BG	EKI	470	16	18	4
4033		LEAR	12	23	0123	S15	E65	12	28.0		BG	EKI	560	24	17	3
4033		MANI	12	23	0149	S14	E65	12	28.0			EKI	930	14	17	2
4033	23492	MWIL	12	23	1700	S13	E58	12	28.1	5	(B)					
4033		BOUL	12	23	1700	S16	E60	12	28.3		B	EKI	350	14	20	1
4033		RAMY	12	23	1725	S14	E58	12	28.1		BG	EKI	1300	34	14	2
4033		LEAR	12	24	0047	S15	E53	12	28.0		BG	EKI	970	39	13	4
4033		MANI	12	24	0215	S14	E52	12	28.0			EKI	330	28	16	2
4033	23492	MWIL	12	24	1700	S13	E43	12	28.0	5	(BY)					
4033		MANI	12	25	0016	S14	E39	12	28.0			EKI	700	28	16	3
4033		LEAR	12	26	0008	S13	E26	12	28.0		BG	EKI	880	51	19	3
4033		MANI	12	26	0030	S14	E25	12	27.9			EKI	740	47	17	3
4033		BOUL	12	26	1640	S13	E16	12	27.9		B	EKC	900	50	20	3
4033	23492	MWIL	12	26	1700	S13	E15	12	27.8	5	(BY)					
4033		PALE	12	26	1834	S12	E17	12	28.1		BG	EKC	860	57	20	4
4033		LEAR	12	27	0049	S12	E11	12	27.9		BG	EKI	900	61	20	3
4033		MANI	12	27	0100	S13	E14	12	28.1			EKI	1000	71	19	3
4033		RAMY	12	27	1355	S13	E06	12	28.0		BGD	EKI	840	82	21	3
4033		HOLL	12	27	1624	S12	E03	12	27.9		BGD	EKI	330	69	21	3
4033	23492	MWIL	12	27	1830	S13	E01	12	27.8	6	D					
4033		PALE	12	27	2305	S13	E01	12	28.0		BGD	EKI	880	40	23	2
4033		LEAR	12	28	0031	S12	W01	12	27.9		BGD	EKI	830	60	21	3
4033		BOUL	12	28	1545	S12	W10	12	27.9		BG	EKO	380	30	19	2
4033	23492	MWIL	12	28	1700	S13	W12	12	27.8	5	(D)					
4033		HOLL	12	28	1857	S12	W12	12	27.9		BGD	EKI	510	49	20	3
4033		MANI	12	29	0028	S12	W16	12	27.8			EAO	690	38	19	3
4033		LEAR	12	29	0035	S13	W15	12	27.9		BGD	EKI	770	37	21	2
4033		RAMY	12	29	1255	S14	W23	12	27.8		BGD	EKI	430	62	22	3
4033		BOUL	12	29	1440	S12	W25	12	27.7		BGD	EKO	490	39	20	2
4033		HOLL	12	29	1555	S13	W25	12	27.8		BGD	EKI	560	62	20	4
4033		PALE	12	29	1930	S13	W26	12	27.8		BGD	EKO	550	46	20	3
4033		MANI	12	29	2336	S12	W29	12	27.8			EAO	560	36	21	3
4033		LEAR	12	30	0022	S13	W29	12	27.8		BGD	EKI	550	37	21	2
4033		RAMY	12	30	1254	S14	W37	12	27.7		BGD	EKO	310	52	23	2
4033		BOUL	12	30	1725	S12	W38	12	27.9		BGD	EAO	260	32	22	2
4033		PALE	12	30	1930	S13	W41	12	27.7		BGD	EAO	420	38	22	4
4033	23492	MWIL	12	30	2145	S13	W42	12	27.7	4	(B)					
4033		MANI	12	30	2334	S13	W43	12	27.7			EAO	340	33	20	3
4033		LEAR	12	31	0012	S13	W41	12	27.9		BGD	EKI	400	30	20	2
4033		RAMY	12	31	1517	S14	W54	12	27.6		BGD	EAO	770	30	21	2
4033	23492	MWIL	12	31	1630	S13	W51	12	27.8	4	(BY)					
4033		BOUL	12	31	1855	S11	W51	12	27.9		BGD	EAO	230	26	22	2
4033		PALE	12	31	2000	S13	W56	12	27.6		BGD	EAO	350	21	22	2
4033		LEAR	01	01	0120	S13	W56	12	27.8		BG	EAO	220	14	20	3
4033		BOUL	01	01	1414	S13	W64	12	27.8		BG	EAO	250	21	21	3
4033	23492	MWIL	01	01	1630	S13	W67	12	27.6	4	(BY)					
4033		HOLL	01	01	1712	S13	W66	12	27.7		BG	EAO	210	21	24	2
4033		PALE	01	01	2000	S12	W68	12	27.7		BG	EAO	180	13	24	3
4033		LEAR	01	02	0030	S13	W70	12	27.7		B	CSO	80	10	21	3
4033	23492	MWIL	01	02	1630	S13	W82	12	27.5	1	AF					
4042	23496	MWIL	12	28	1700	S20	W12	12	27.8	2	(AP)					
4042		HOLL	12	28	1857	S19	W13	12	27.8		A	AXX	10	2	2	3
4042		MANI	12	29	0028	S20	W17	12	27.7			BXO	50	3	3	3
4042		LEAR	12	29	0035	S19	W18	12	27.6		B	DSO	50	5	4	2
4042		RAMY	12	29	1255	S21	W23	12	27.8		A	AXX	10	2	1	3
4042		BOUL	12	29	1440	S18	W26	12	27.6		B	CRO	30	3	6	2
4042		HOLL	12	29	1555	S18	W27	12	27.6		B	CAO	30	4	6	4
4042		PALE	12	29	1930	S19	W28	12	27.7		B	CRO	30	5	5	3
4042		MANI	12	29	2336	S20	W30	12	27.7			BXO	20	3	4	3
4042		LEAR	12	30	0022	S19	W31	12	27.6		B	CSO	10	2	4	2
4042		RAMY	12	30	1254	S18	W37	12	27.7		A	AXX	10	1	1	2
4042		BOUL	12	30	1725	S17	W39	12	27.8		B	BXO	10	2	2	2
4042		PALE	12	30	1930	S18	W42	12	27.6		B	BXO	10	3	5	4
4042		MANI	12	30	2334	S19	W42	12	27.8			BXO	10	2	2	3
4042		LEAR	12	31	0012	S19	W43	12	27.7		B	BXO	10	3	4	2
		MANI	12	21	2337	S17	E79	12	28.0			HAX	50	2	1	2

REGIONS OF SUNSPOT ACTIVITY
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

DECEMBER 1982

NOAA/ USAF Region	Mt Wilson Region	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
		BOUL	12	29	1440	S16	W06	12	29.2		A	AXX		1		2
4043		BOUL	12	30	1725	S01	W12	12	29.8		A	AXX	10	2	2	2
4043		PALE	12	30	1930	S02	W15	12	29.7		A	AXX	10	3	2	4
4043		MANI	12	30	2334	S02	W18	12	29.6			AXX	10	2		3
4043		LEAR	12	31	0012	S02	W18	12	29.7		A	AXX		2	1	2
4039		BOUL	12	23	1700	S15	E81	12	29.8		A	HHX	120	1	4	1
4039	23493	MWIL	12	23	1700	S15	E82	12	29.9	4	(AP)					
4039		RAMY	12	23	1725	S14	E78	12	29.6		A	HKX	140	1	4	2
4039		LEAR	12	24	0047	S16	E75	12	29.7		A	HHX	140	1	4	4
4039		MANI	12	24	0215	S15	E76	12	29.9			HHX	320	1	2	2
4039	23493	MWIL	12	24	1700	S15	E68	12	29.9	4	(AP)					
4039		MANI	12	25	0016	S15	E63	12	29.8			HSX	170	1	2	3
4039		LEAR	12	26	0008	S16	E50	12	29.8		B	CSO	170	5	3	3
4039		MANI	12	26	0030	S16	E50	12	29.8			CSO	200	7	3	3
4039		BOUL	12	26	1640	S15	E41	12	29.8		B	HSO	140	2	4	3
4039	23493	MWIL	12	26	1700	S15	E40	12	29.7	5	(BP)					
4039		PALE	12	26	1834	S14	E40	12	29.8		A	HSX	150	2	2	4
4039		LEAR	12	27	0049	S15	E36	12	29.8		B	CSO	180	4	6	3
4039		MANI	12	27	0100	S15	E36	12	29.8			CSO	190	3	5	3
4039		RAMY	12	27	1355	S17	E30	12	29.9		B	DHO	200	9	7	3
4039		HOLL	12	27	1624	S15	E28	12	29.8		B	CAO	190	10	8	3
4039	23493	MWIL	12	27	1830	S17	E28	12	29.9	5	BP					
4039		PALE	12	27	2305	S17	E26	12	29.9		B	DSO	200	7	7	2
4039		LEAR	12	28	0031	S16	E25	12	29.9		B	DSO	200	9	6	3
4039		BOUL	12	28	1545	S15	E15	12	29.8		B	CSO	100	8	4	2
4039	23493	MWIL	12	28	1700	S16	E15	12	29.8	5	(BP)					
4039		HOLL	12	28	1857	S17	E14	12	29.9		B	CSO	130	6	6	3
4039		MANI	12	29	0028	S16	E12	12	29.9			CSO	100	8	6	3
4039		LEAR	12	29	0035	S17	E12	12	29.9		B	DSO	200	8	4	2
4039		RAMY	12	29	1255	S15	E04	12	29.8		B	CAO	140	13	7	3
4039		BOUL	12	29	1440	S15	E02	12	29.8		B	CSI	160	13	7	2
4039		HOLL	12	29	1555	S14	E02	12	29.8		B	DAO	160	17	7	4
4039		PALE	12	29	1930	S15	E01	12	29.9		B	CAO	150	18	6	3
4039		MANI	12	29	2356	S16	W00	12	30.0			CAO	160	14	5	3
4039		LEAR	12	30	0022	S16	W01	12	29.9		B	DSO	190	9	5	2
4039		RAMY	12	30	1254	S16	W08	12	29.9		B	DAO	160	18	6	2
4039		BOUL	12	30	1725	S13	W09	12	30.0		B	CSO	140	9	5	2
4039		PALE	12	30	1930	S16	W12	12	29.9		B	DSO	110	12	5	4
4039	23493	MWIL	12	30	2145	S17	W13	12	29.9	3	(BP)					
4039		MANI	12	30	2334	S16	W14	12	29.9			DAO	190	16	5	3
4039		LEAR	12	31	0012	S17	W14	12	29.9		B	DAO	190	14	5	2
4039		RAMY	12	31	1517	S16	W22	12	30.0		B	DAO	100	14	6	2
4039	23493	MWIL	12	31	1630	S17	W23	12	29.9	4	(BP)					
4039		BOUL	12	31	1855	S17	W22	12	30.1		B	DSO	90	13	6	2
4039		PALE	12	31	2000	S17	W26	12	29.9		B	DSO	90	8	6	2
4039		LEAR	01	01	0120	S17	W27	12	30.0		B	DAO	130	13	5	3
4039		BOUL	01	01	1414	S17	W35	12	29.9		B	DAO	50	10	6	3
4039	23493	MWIL	01	01	1630	S17	W37	12	29.9	4	(BY)					
4039		HOLL	01	01	1712	S16	W37	12	29.9		B	CAO	40	10	6	2
4039		PALE	01	01	2000	S16	W39	12	29.9		B	CSO	40	5	5	3
4039		LEAR	01	02	0030	S17	W41	12	29.9		B	DSO	60	5	6	3
4039		BOUL	01	02	1615	S14	W50	12	29.9		B	BXO	10	2	2	3
4039	23493	MWIL	01	02	1630	S17	W51	12	29.8	3	(BP)					
4040		BOUL	12	26	1640	S20	E65	12	31.7		A	AXX		1		3
4040	23494	MWIL	12	26	1700	S20	E65	12	31.7	3	(AP)					
4040		PALE	12	26	1834	S20	E65	12	31.7		A	AXX	10	1	1	4

SUDDEN IONOSPHERIC DISTURBANCES

December 1982

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide-spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Known Flare	NOAA/SESC Region
01	0114	0130	0157	1-	1			1			NF	
01	0200	0216	0240U	1-	3			1	1		NF	
01	0342	0352	0434	1-	1				1		NF	
01	0640	0705	0749	1-	1			1			NF	
01	1010	1020	1100	1	3		2				*	
01	1241	1243	1315	1	3		2				NF	
01	1732	1733	1745	1-	1					1	NF	
01	1822	1823	1843	1-	3					2	NF	
01	2010	2015	2030	1	3					2	NF	
01	2110	2122	2209	1	1			1			*	
01	2240	2304	2353	1-	1			1			NF	
02	0252	0259	0322	1-	1			1			0249	4005
02	0614	0622	0640	1-	1			1			0613	No data
02	0642	0700	0848	1-	3			1	1	1	0642	No data
02	0932	0940	1022	1			2				NF	
02	1745	1751	1830	1	3	2				8	1733	4012
02	2115	2123	2141	1	3	2				6	2107	4005
02	2240	2304	2349	1-	1			1			2237	4012
03	0111	0125	0300	2+	5	1		1	1	4	0109	No data
03	0313	0330	0415	1-	3			1	1		NF	
03	0603	0609	0640	1-	3		1	1	1	2	0603	X-ray
03	0900	0912	0954D	2	5	1	3	1	1	4	0900	4014
03	0955	1007	1045	2	3		1	1	1		0953	X-ray
03	2259	2305	0051	1	5	1		1		6	2300	4014
04	0120	0139	0228	1-	1			1			0115E	No data
04	0316	0326	0336U	1-	1				1		0328E	No data
04	0524	0532	0557	1-	3			1	1	1	0526	4005
04	0606	0610	0630	1-	3			1	1	1	0606	4014
04	0802	0808	0857	1-	3			1		1	0800	X-ray
04	0913	0917	0945	1	5	1		1	1	3	0911	No data
04	1040	1046	1055	1-	3				1	2	NF	
04	1203	1211	1245	2	5	1	4	1	1	2	1200	X-ray
04	1717	1731	1758	1+	3	1				12	1713	X-ray
04	1957	2008	2030	1-	3					3	1954	4017
04	2118	2126	2218	1-	3			1		3	2120	4017
05	0027	0035	0112	1-	3			1	1	1	0025	X-ray
05	0201	0209	0243	1-	3			1	1		0201	X-ray
05	0244	0250	0307D	1-	3			1	1		0248	No data
05	0308	0316	0328D	1-	3			1	1		0320E	4013
05	0423	0440	0526D	1	3			1		3	0427	4014
05	0612	0628	0748	1	3			1		2	0609	4014
05	0748	0759	0826	1	3		2				NF	
05	0806	0821	0920	1	3			1		2	0807	X-ray
05	1001	1008	1049	2+	5		4	1	1	1	0958	X-ray
05	1618	1623	1642	1	3	2				4	1615	4014
05	1632	1637	1700	1	3					2	NF	
05	1924	2020	2145	3	3					3	NF	
06	0152	0221	0322	1-	3			1	1		NF	
06	0503	0522	0620	1-	3			1	1		0502	X-ray
06	0808	0820	0946	2+	5	1		1	1	4	0813E	4012
06	1910	1917	1940	1-	3					2	1911E	4007
06	2026	2041	2100	1+	3					2	2029	4014
06	2115	2120	2300	1+	5	1		1		10	2104	X-ray
06	2352E	0016	0123	1-	3			1		2	2346	4021
07	0210	0214	0230D	1-	3	1		1	1		0208	X-ray
07	0250E	0312	0526	2	3			1	1		0245	No data
07	0444E	0500	0507D	1-	3			1	1	2	0426	4013
07	0538	0542	0559D	1-	3				1	1	0537	4014
07	0829	0835	0858	1-	3			1		1	0828	4013
07	1317	1322	1340	1-	3	1			1	4	1316	X-ray

SUDDEN IONOSPHERIC DISTURBANCES

December 1982

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide-spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Known Flare	NOAA/SESC Region
07	1640	1712	1748	1+	3					3	1639	4022
07	1748	1752	1807	1-	3					9	1748	4019
07	1808	1809	1845	1	3					9	1811E	4007
07	2322	2355	0248D	3+	3	1		1		6	2325	4017
08	0221	0231	0245	1-	3					3	0227	4013
08	0250E	0314	0530D	3	3	1		1		1	0253	No data
08	0700	0715	0730	1-	3					2	NF	
08	0824E	0841	0956	2	3		2	1		4	0828	4022
08	1110	1124	1252	1	5	1	4	1	1	2	1106	X-ray
08	1336	1346	1440	2	5	4	4		1	1	1328	4017
08	1429	1455	1624	3	3					5	NF	
08	1937	1946	2015	1	3					8	1935	X-ray
09	0000	0008	0025	1-	3			1	1		NF	
09	0235	0303	0446	1	3	1		1	1	2	0235	4014
09	0254	0300	0340	1-	3				1	1	0255E	No data
09	0447	0453	0636D	2+	3	1		1	1	3	0447	No data
09	0637	0640	0722	1-	3			1		2	0637	No data
09	0935	0947	1000	2	3	1	2	1	1		NF	
09	1038	1049	1140	1+	3	1	2	1	1		1031	X-ray
09	1125	1137	1321	2+	3	2	4		1	1	1123	X-ray
09	1353	1359	1410	1-	3	1	3		1	1	1345	X-ray
09	1415	1419	1440	1-	3					2	1413	X-ray
09	1600	1606	1630	1	3					10	NF	
09	1635	1641	1645	1-	3	2				8	1612	4022
09	1737	1803	1830	1+	3	2				7	1736	4022
09	1902	1907	1917	1	3	2				9	1900	4022
09	2112	2115	2130	1-	3					6	*	
09	2140	2209	2259D	2	5	3		1		4	2145	X-ray
09	2302	2311	2319	1-	3			1		3	2257	4014
09	2319	2326	0000	1	3					4	2315	X-ray
10	0017E	0031	0115D	2+	3	2		1		3	0016	X-ray
10	0035		0042	1	1					1	0037	4022
10	0115E	0122	0156D	2+	3	1		1	1	2	0114	X-ray
10	0156E	0207	0237D	2	3			1	1		0156	4022
10	0237E	0250	0357D	3+	3	1		1	1	3	0237	4022
10	0401	0431	0617	2+	3	1		1	1	3	0402	No data
10	0800	0805	0830	1	5			1	1	4	0800	4014
10	1317	1332	1350	2	5	1	2		1	3	1316	No data
10	1617	1630	1645	1	3	2				8	1602	4014
10	1705	1714	1731	1	3					3	NF	
10	1750	1800	1815	1	3	1				8	1748	X-ray
10	1815	1826	1845	1	3	1				9	1814	X-ray
10	2209	2212	2251	1-	1			1			2208	X-ray
10	2252	2300	2341	1-	1			1			2254	X-ray
11	0031	0049	0140D	1-	3			1	1	1	0029	X-ray
11	0139	0144	0214	1-	3	1		1	1	1	0142	No data
11	0222	0241	0312D	2	3	1		1	1	1	0226	No data
11	0248	0251	0320	1-	3			1		1	0247	No data
11	0344E	0408	0437D	1	3			1	1	1	0343	4021
11	0402	0408	0433	1-	3				1	1	0402E	No data
11	0438	0450	0600	3	3	1		1	1	4	0439	4025
11	0545	0546	0600	1-	1					1	0544	4021
11	0612E	0625	0728D	2	3			1	1	1	0608	4012
11	0730	0731	0745	1-	3			1		1	0720	4014
11	0948	0953	1015	1	3			1	1	1	0949	4014
11	1545	1547	1600	1+	3					3	1548	4022
11	1829	1835	1910	1	3					2	1829	X-ray
11	1958	2001	2015	1-	3					2	1948	4022
11	2108	2113	2139	1-	3	1		1		1	NF	
11	2337	2344	0036	1-	3			1		3	2341	4022
12	0147	0152	0242	1-	3			1	1	1	0159E	No data

SUDDEN IONOSPHERIC DISTURBANCES

December 1982

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide-spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Known Flare	NOAA/SESC Region
12	0249	0256	0330	1-	3			1	1	3	0250	No data
12	0640	0648	0720	1-	3			1	1	2	0637	No data
12	1322	1327	1335	1-	3		2		1	1	1322	4014
12	1657	1715	1750	1	3					4	1656	X-ray
13	0322	0333	0446D	3+	3	1		1	1		0321	4026
13	0448	0502	0538	1	1			1			0502E	No data
13	0802	0812	1014	3	5	1	3	1	2	3	0802	4026
13	1803	1807	1845	1	3					4	1809	4022
13	1853	1859	1940	1-	3					4	NF	
13	1955	2000	2005	1	3	2				6	1957E	4026
13	2102	2123	2145	1	3					3	2112	4022
14	0350	0400	0500	1-	3			1	1	3	0345	X-ray
14	0628	0642	0720	1-	3			1	1	2	0630	X-ray
14	0738	0751	0912	1-	3			1		1	0740	4026
14	1602	1613	1640	1-	1					1	1606	4026
14	2017	2030	2120	1	3					3	2015	4026
15	0157	0204	0536	3+	5	2		1	1	4	0157	4026
15	1630	1640	1705	2	3	2				13	1620	4026
15	2044	2052	2146D	2	5	3		1		10	2045E	4025
15	2146E	2159	0050	2+	5	3		1		9	2153	X-ray
16	0058	0105	0128	1-	1			1			0058	4022
16	0305	0310	0330	1-	3			1	1	1	0306	4026
16	0544	0600	0621	1-	1			1			0543	No data
16	0621	0625	0712	1-	3			1	1	1	0621	4026
16	1004	1014	1154	2+	5	1	2	1	1	2	1007	4026
16	1416	1428	1448	1	3		1			2	1418	4026
16	1455	1508	1550	2	5	2	3		1	12	1453	4025
16	1928	1944	2000	1	3	1				3	1927	4026
16	2210	2214	2248	1-	1			1			2211	4021
17	0109	0112	0123D	1-	3			1	1		*	
17	0144	0155	0348	3	5	2		1	1	4	0153E	4026
17	0221	0229	0251	1+	1					1	0221	No data
17	0420	0452	0626	2	3			1	1	4	0421	4022
17	0804	0818	0856	1-	3			1		4	0806	X-ray
17	1001	1012	1148	2	5		2	1	1	2	1002	X-ray
17	1650	1700	1820	1+	3	2				11	1643	4026
17	1820	1855	2025	3	1					1	1820	4025
17	1848	1902	2030	2+	5	3				12	1848	4017
17	2030	2036	2050	1-	1					1	2028	4026
17	2106	2118	2146D	1	5	2		1		9	2106	4026
17	2148	2155	2201	1+	5	2		1		7	2144	X-ray
17	2249	2255	2312	2+	5	2		1		5	2250	4021
18	0222	0241	0342	1-	3			1	1		0235	No data
18	0302	0310	0340	1-	1				1		0304	No data
18	0602	0622	0800	1	3			1	1		0602	4026
18	0821	0827	0953	3+	5	2	4	1	1	5	0822	4026
18	0954	0959	1030	1	3	1	4	1	1	2	0953	4022
18	1401	1406	1410	1-	3	1	2		1		NF	
18	1503	1509	1530	1-	5	2	4		1	9	1504	4026
18	2122	2123	2135	1-	3					2	2120	X-ray
18	2248	2252	2349	1-	1			1			2249	4022
18	2349	0004	0032D	1-	1			1			2349	X-ray
19	0032	0058	0134D	1+	3	1		1	1	3	0032	X-ray
19	0048	0057	0115	1	1					1	0046	4025
19	0134E	0144	0227D	2+	3	1		1	1	4	0135	No data
19	0228E	0236	0420	1+	3			1		3	0230	No data
19	0452	0456	0526	1-	3			1	1	1	0453	4026
19	0622	0626	0700	1-	3			1	1		0623	No data
19	0905	0910	0920	1-	3		1		1	1	0855	4026

SUDDEN IONOSPHERIC DISTURBANCES

December 1982

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide-spread Index	Number of Station Reports by Type					Known Flare	NOAA/SESC Region
						SWF	SEA	SPA	LF-SPA	SES		
19	0948	0954	1015	1-	3				1	1	0949	4022
19	1240	1250U	1330	1	3		2				NF	
19	1540	1645	1830	2+	3					7	1541	4022
19	2228	2236	0007	1-	5	1		1		5	2230	4022
20	0013	0027	0056	1	3	2		1	1		0019	4022
20	0101E	0111	0214	1-	3			1	1		0100	X-ray
20	0215	0223	0412	1	3	1		1	1	1	0216	4022
20	0711	0719	0810	1	1			1			0710	X-ray
20	0858	0908	0938	1-	1			1			0849	4026
20	1247	1252	1315	1-	3		1		1		1244	X-ray
20	1602	1608	1630	1	3					7	1602	4025
20	1703	1706	1800	1+	3					9	1702	4033
20	2339	2340	0000	1-	3			1		1	2338	X-ray
21	0211	0219	0419	2+	3	1		1	1		0209	X-ray
21	0420	0513	0646D	3+	3			1	1	1	0421	X-ray
21	0454	0507	0750	1+	3	1		1	1	3	0458	X-ray
21	0641E	0650	0826	2+	3			1		1	0643	X-ray
21	0702	0713	0730	1	3					2	NF	
21	1846	1850	1900	1-	1					1	1845	X-ray
21	2038	2040	2119	1	3					2	2033	X-ray
21	2119	2120	2152	1+	3					2	2123	X-ray
21	2310	2338	0047	1-	3			1			2311	X-ray
21	2327	2333	2346	1-	3	1		1		1	NF	
22	0132	0150	0202U	1-	3				1	1	0128	4033
22	0208	0222	0300	1-	3			1	1	2	0208	4026
22	0314	0321	0408	1-	3			1	1		0312E	4025
22	0632	0712	0745	1-	3			1		2	0631	4025
22	0823	0834	1023	3+	5	3	4	1	1	4	0826	4025
22	2241	2246	2306	1-	3			1		2	2241	4033
23	0511	0516	0630	1-	3			1	1	1	0509	4025
23	0728	0744	0854	1-	3			1		2	0729	4033
23	1650	1700	1730	2	1					1	NF	
24	0122	0128	0223	1-	1			1			0125	4033
24	1014	1021	1135	1-	3			1		1	1008	X-ray
24	1424	1430	1445	1	1					1	*	
24	1644	1700	1750	2+	3	1				2	*	
24	1930	1943	2030	1	3					7	1912	X-ray
25	0327	0333	0420	1-	3			1	1	3	0325E	No data
25	0446	0521	0608	1-	3			1	1	1	0445	X-ray
25	0614	0632	0715D	2	3			1	1	4	0618E	No data
25	0716E	0755	0938	3	3			1	1	1	0711E	No data
25	0749	0755	0809	2	3	2			1		0743	X-ray
25	1241	1243	1255	1	3		2				*	
25	1630	1645	1824	3	3					2	*	
25	1758	1803	1815	1-	3	1				4	1753	X-ray
26	0012	0018	0119	1+	3	1		1	1	2	0011	4033
26	0105	0120	0135	1-	3	1				1	0103	4031
26	0119	0126	0139D	1	3			1	1	1	0117	X-ray
26	0150	0200	0330	1+	3	1		1	1	4	0150E	4033
26	0932	0940	1054	2	3			1	1	5	0909	4033
26	1510	1515	1528	1-	3	1				1	1456	X-ray
27	0525	0531	0656	1-	3			1	1	1	0524	4033
27	1148	1200	1222	1	1		1				1148	X-ray
27	1427	1430	1450	1-	1					1	1427	4032
27	1644	1647	1750	2+	1					1	1647	4032
27	1821	1824	1843	1	1					1	1821	4032
27	2020	2024	2050	1-	5			1		9	2020	4033
27	2200	2208	2230	1-	3					2	NF	

SUDDEN IONOSPHERIC DISTURBANCES

December 1982

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide-spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Known Flare	NOAA/SESC Region
28	0128	0136	0222	1-	3			1	1	1	0127E	No data
28	0407	0412	0439	1-	1			1			0408	X-ray
28	0849	0852	0910	1-	1			1			0845E	4032
28	1206	1212	1228	1-	3		1	1		1	1158	X-ray
28	1559	1600	1621	1	3	1				5	1551	X-ray
29	0136	0144	0232	1-	3	1		1	1		0137	4041
29	0644	0649	0933	3+	3	1	2	1	1		0644	4033
29	2000	2007	2020	1-	3					2	2008	4032
29	2222	2355	0142	1-	1			1			*	
30	0142	0159	0352	3+	3	1		1	1	1	0140	4033
30	0607	0611	0644	1-	3			1		1	0604	4033
30	0919	0923	0957	1-	3			1		2	0915	X-ray
30	1808	1812	1825	1-	3	1				7	*	
30	1845	1857	1920	1	3					7	1844	4040
30	2223	2237	2338	1-	3			1		5	2223	4033
30	2300		2315	1-	1		1				2258	4042
31	0014	0026	0100	2	3	1	1	1	1	1	0014	4033
31	0310	0403	0640	1-	1			1			NF	
31	0512	0524	0649	1-	3			1	1	2	0514	No data

* = No Flare Patrol
NF = No Flare Reported
X-ray = Event observed only at X-ray wavelengths

OBSERVATORIES REPORTING FOR DECEMBER 1982*

Ayrshire, Scotland (AY)	SES	Maui, Hawaii, USA (MI)	SWF
Darmstadt, GFR (DA)	SWF	Mayfield Village, Ohio, (USA) (A28)	SES
Edenvale, South Africa (A52)	SES	Missoula, Montana, USA (A31)	SES, SWF
Frenchtown, Montana, USA (A56)	SES	Panska Ves, Czechoslovakia (PU)	SEA, SWF
Glenorchy, Tasmania, Australia (GH)	SES	Paterson, New Jersey, USA (A46)	SES
Hiraiso, Japan (HI)	SWF	Portage, Michigan, USA (A51)	SES
Hobart, Tasmania, Australia (TA)	SEA	San Antonio, Texas, USA (SA)	SES
Houston, Texas, USA (A50)	SES	Sofia, Bulgaria (SF)	SES
Huancayo, Peru (HU)	SWF	St. Cloud, Minnesota, USA (SC)	SES
Inubo, Japan (IN)	SPA	Tavares, Florida, USA (A49)	SES
Juilusruh, GDR (JU)	SWF	Trenton, New Jersey, USA (NJ)	SES
Kuhlungsborn, GDR (KU)	SPA, SEA	Upice, Czechoslovakia (UI)	SEA
Lake Hiawatha, New Jersey, USA (A32)	SES	Valley Cottage, New York, USA (A01)	SES
Latrobe, Pennsylvania, USA (A19)	SES	Vsetin, Czechoslovakia (VS)	SEA
Lintong, China (LT)	SPA	Walla Walla, Washington, USA (A55)	SES
Los Alamos, New Mexico, USA	SES		

*Observations are not necessarily continuous for each reporting station.

SIDs by NOAA/SESC REGION

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Region Number																															
4005		2		1																											
4007						1	1																								
4012		2				1					1																				
4013					1		2	1																							
4014			2	1	3	1	1		2	2	2	1																			
4017				2			1	1									1														
4019							1																								
4021						1					2					1	1														
4022							1	1	3	3	3		2			1	1	2	3	2											
4025											1				1	1	1		1	1		3	1								
4026													3	3	2	5	4	3	2	1		1									
4031																										1					
4032																											3	1	1		
4033																				1		2	1	1		3	2		1	3	1
4040																														1	
4041																													1		
4042																														1	
X-Ray			2	3	4	2	2	2	6	6	2	1		2	1		3	2	1	4	8			2	3	2	1	3			1	
No Flare	9	1	1	1	3	1		2	3	1	1		1					1	1		2		1		2		1				1
No Flare Patrol	2								1								1							2					1	1	
No Data		2	1	3	1		1	1	3	2	4	3	1			1	1	2	3						3			1			1
Event Totals	11	7	6	11	12	7	10	8	18	14	16	5	7	5	4	9	13	10	11	9	10	6	3	5	8	6	7	5	4	7	3

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

DECEMBER 1982

Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
01	0000	0720	CULG				0000.0	0025.0	1				IS
			CULG	0008.5	0029.5	2	0028.5	0030.0	3	0028.5	0031.0	2	IIIG,V
			LEAR				0026.3	0026.5	1				III
			LEAR				0028.3	0029.6	2				III
			LEAR				0029.6	0031.0	2				V
			LEAR				0035.0	0044.8	1				CONT
			LEAR				0044.8	0050.3	2				III
			LEAR				0044.8	0212.0	2				CONT
			CULG				0045.0	0050.0	3	0045.0	0047.5	1	IIIGG
			CULG				0139.5	0704.0	1				IIIN
			CULG	0307.5	0715.0	1							IN
			CULG				0344.5	0542.0	2				IIIN
			LEAR				0522.0	0613.5	1				G
			LEAR				0703.6	0704.0	1				III
	0740	1500	BLEN										
	0718	1449	WEIS				0804.5	0804.7	1				IIIB
			WEIS				1231.9	1232.4	3				IIIB
	2020	2400	CULG				2037.0	2038.0	2				IIIG
			CULG				2121.5		1				IIIB
			CULG	2121.5	2332.5	1							IN
			CULG				2231.5		1				IIIB
02	0000	0721	CULG	0014.0	0721.0	1							IS,DC
			CULG				0208.0	0350.5	1				IIIN
			LEAR				0208.0	0210.6	1				III
			CULG				0221.5		2				IIIB
			LEAR				0317.5	0353.0	1				CONT
			CULG				0319.0	0344.5	1			II	
			LEAR				0631.5	1037.0	2				CONT
			CULG				0641.0	0647.5	3				IIIGG
			CULG				0649.0	0657.5	3			II	
			CULG				0655.0	0721.0	1				IS
	0734	0834	WEIS				0749.0	1440.0	2				IS
	0740		BLEN				0921.2	0924.5	2				IIIG
	0844	1350	WEIS				0922.7	0923.7	2				IIIG,RS
			BLEN				1045.5	1500.0D	1				IN
	1411	1448	WEIS										
	2027	2400	CULG	2043.5	2400.0	1	2027.0	2151.5	1				IS
			CULG	2110.0	2113.0	1	2106.0	2115.5	3				IIIGG
			CULG				2119.5	2135.5	3			II	
			CULG	2125.0	2126.0	1	2124.5	2125.5	1				IIIG
03	0000	0721	CULG	0000.0	0210.0	1							IS
			LEAR				0012.6	0012.8	1				III
			LEAR				0124.3	0124.6	1				III
			CULG	0210.0	0500.0	1							IN
			LEAR				0250.1	0255.1	1				III
			CULG				0252.5	0313.0	1				IIIN
			LEAR				0301.8	0315.5	1				CONT
			CULG	0500.0	0710.0	1	0427.0	0617.0	1				IS
	0736	1448	WEIS										
	1101	1445	BLEN				1201.7	1202.0	3				IIIG
			BLEN	1409.1	1409.1							2	IIIB
			CULG	2021.5	2400.0	2							IS,DC
	2021	2400	CULG				2021.5	2359.5	1				IN
			CULG				2022.0	2132.5	1				IIIS
			CULG				2221.5	2353.5	1				IIIN
			LEAR				2300.1	2306.5	2				III
			CULG				2303.0	2307.0	3				IIIGG
			LEAR				2328.8	0533.0	1				CONT
04	0000	0722	CULG	0000.0	0130.0	1	0000.0	0230.0	1				IS,C,DC
			CULG				0010.5	0013.0	2				IIIGG
			CULG				0014.0	0014.5	3				IIIB
			CULG				0015.0	0110.0					IIIS,W
			CULG				0118.5	0128.5	1				IIIS
			CULG				0124.0	0717.0	2				IIIN
			CULG	0130.0	0450.0	2	0230.0	0535.5	2				IS
			CULG				0244.0	0250.0	1				IIIS
			CULG				0411.5	0413.0	2				IIIG
			CULG				0427.0	0530.0	1				IIIS

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

DECEMBER 1982

Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
04			CULG	0450.0	0722.0	1							IN
			CULG				0535.5	0722.0	1				IS
			LEAR				0618.5	0619.0	1				III
			LEAR				0640.8	0641.1	1				III
			LEAR				0706.8	1038.0	1				CONT
	0737	1430	WEIS				0746.0	1430.0	3				IN
			WEIS				0747.7	0747.9	2				IIIB
			WEIS				0803.2	0807.4	1				IIIG
			WEIS				0809.7	0813.7	2				IIIG
			WEIS				0825.4	0825.7	3				IIIG
			LEAR				0825.5	0825.8	2				III
	0810	1450	BLEN				0901.0	1430.1	1				IN
			WEIS				0907.8	0908.0	1				IIIB
			WEIS				1011.9	1012.7	1				IIIG
			WEIS				1024.6	1024.9	1				IIIB
			WEIS				1027.3	1027.8	3				IIIG
			WEIS				1109.7	1109.9	1				IIIB
			WEIS				1206.4	1209.3	3				IIIGG
			BLEN	1208.2	1208.9		1206.6	1208.9	3				IIIG
			WEIS				1214.7	1214.8	1				IIIB
			WEIS				1226.6	1227.8	3				IIIG
			BLEN				1245.3	1245.4	2				IIIG
			WEIS				1245.3	1245.4	2				DCIM
			WEIS				1255.4	1258.2	3				IIIG
			BLEN	1257.4	1258.3	2	1257.4	1257.9	3				IIIG
			WEIS				1301.3	1312.5	2				IIIG
			WEIS				1318.7	1319.3	3				IIIG
			WEIS				1327.0	1430.0	2				IIIS
			BLEN				1343.7	1343.4	2				IIIG
			WEIS				1343.7	1345.6	2				DCIM
			BLEN				1425.2	1425.5	2				IIIG
			CULG				2022.0	2400.0					IIIS,W
	2022	2400	CULG				2022.0	2400.0	1				IS,C
			CULG	2159.5	2200.0	2							IIIG
			CULG	2212.0	2400.0	1							IS,C
			LEAR				2302.5	1039.0	1				CONT
			CULG	2305.5		1							DC,M
			CULG	2311.0	2314.0	1							IIIN
			CULG				2323.5	2216.0	1				IIIN
05	0000	0722	CULG	0000.0	0722.0	1	0000.0	0722.0	1				IS,C,DC
			CULG				0005.5	0720.5	1				IIIN
			CULG				0025.5	0028.0	3	0026.0	0028.0	1	IIIGG
			LEAR				0025.6	0028.0	2				III
			CULG				0105.0	0420.0					IIIS,W
			LEAR				0620.6	0624.0	2				III
			CULG	0621.0	0623.0	1	0620.5	0624.0	3	0620.5	0623.0	2	IIIGG
	0810	1447	BLEN				0810.0E	1447.0D	2				I
	0738	1447	WEIS				0836.0	1445.0	2				IS
			BLEN				1030.8	1032.1	1				IIIG
			WEIS				1030.9	1032.3	3				IIIGG
			WEIS				1110.4	1124.4	1				IIIG
			WEIS				1208.8	1209.3	2				IIIG
			WEIS				1444.8	1445.0	2				IIIB
			CULG				2022.0	2400.0	1				IIIS
	2022	2400	CULG	2022.0	2400.0	1	2022.0	2328.0	3				IS,C,DC
			CULG				2024.5	2356.0	1				RSDP,N
			CULG				2028.5	2242.0	2				IIIN
			LEAR				2150.0	0947.0	1				CONT
			CULG				2328.0	2400.0	2				IS,C,DC
			CULG				2330.5	2332.0	3	2330.5	2332.0	2	IIIG
			LEAR				2330.6	2332.3	2				III
06			CULG				0000.0	0723.0	1				IIIS
	0000	0723	CULG	0000.0	0723.0	1	0000.0	0723.0	1				IS,C,DC
			CULG				0001.0	0719.5	1				RSDP,N
			CULG				0200.0	0306.5	2	0200.0	0306.5	1	IIIN
			CULG				0200.0	0340.0	2				IS,C,DC
			LEAR				0200.6	0201.1	1				III
			LEAR				0228.6	0236.6	2				III
			CULG				0303.0		3	0303.0		1	IIIB

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06		LEAR				0417.0	0417.6	1				III
		LEAR				0443.3	0447.8	3				III
		CULG				0444.0	0447.0	3	0444.0	0447.0	1	IIIGG
		LEAR				0622.6	0623.1	1				III
		CULG				0649.5		2				IIIB
		LEAR				0731.8	0741.1	2				III
	0740	1447 WEIS				0745.0	1445.0	3				IS,DC
	0822	1450 BLEN				0822.0E	1450.0D	2				IC
		WEIS				0825.7	0825.8	1				IIIB
		WEIS				0910.3	0913.9	1				IIIG
		LEAR				0932.8	0934.1	1				III
		WEIS				0932.8	0933.4	2				IIIG
		WEIS				0935.0	0935.1	1				IIIB
		WEIS				0942.2	0943.4	2				IIIG
		WEIS				0945.0	0948.9	2				IIIG
		WEIS				1002.1	1002.2	1				IIIB
		LEAR				1005.6	1007.0	2				III
		WEIS				1005.7	1007.4	3				IIIG
		BLEN				1005.8	1006.4	3				IIIV
		WEIS				1009.4	1013.8	2				IIIG
		WEIS				1027.2	1027.3	1				IIIB
		BLEN				1031.0	1331.5	2				III
		WEIS				1031.2	1031.6	2				DCIM
		WEIS				1056.0	1059.3	1				IIIG
		WEIS				1106.2	1106.8	1				IIIG
		WEIS				1120.6	1123.7	1				IIIG
		WEIS				1150.7	1153.3	2				IIIG
		WEIS				1253.1	1255.8	2				IIIG
		WEIS				1304.1	1305.5	2				DCIM
		BLEN				1304.2	1305.2	3				III
		BLEN	1304.2	1305.5	2							DCIM
		WEIS				1304.4	1306.2	2				IIIG
		SGMR				1304.6	1305.3	1				V
		WEIS				1341.7	1344.9	1				IIIG
		WEIS				1348.0	1348.2	2				IIIB
		WEIS				1356.3	1357.0	1				IIIG
		BLEN				1409.1	1416.6	2				IIIG
		WEIS				1409.1	1410.6	2				IIIG
		WEIS				1416.4	1417.1	3				IIIG
		SGMR				1806.1	1806.3	1				V
		SGMR				1841.3	1842.1	1				V
		SGMR				1938.5	1940.0	1				III
	2023	2400 CULG	2023.0	2044.5	1							IN
		CULG	2026.0	2027.0	3	2026.0	2113.5	3	2059.0	2059.5	3	IIIG,N
		SGMR				2026.3	2026.6	1				III
		LEAR				2258.3	2307.1	1				III
		CULG				2303.5		2				IIIB
		CULG				2323.0	2400.0	1				IS,DC
		CULG				2323.5	2355.5	1				IIIN
		LEAR				2332.1	2333.1	1				III
		LEAR				2343.1	2343.3	1				III
		LEAR				2355.5	2355.8	1				III
07	0000	0723 CULG				0000.0	0723.0	1				IS,DC
		LEAR				0000.1	0001.3	2				III
		CULG				0000.5	0001.5	3	0000.5	0001.0	1	IIIG
		CULG				0001.5	0707.0	1				IIIN
		LEAR				0003.0	1040.0	1				CONT
		CULG				0017.5	0633.5	2				IIIN
		CULG				0138.0	0139.0	3	0138.0	0139.0	1	IIIG
		LEAR				0138.0	0139.8	2				III
		CULG	0357.0	0412.0	1							IIIG,N
		CULG				0411.0	0411.5	3	0411.0	0411.5	1	IIIG
		CULG	0440.5	0501.0	1							IS
		CULG	0450.0	0451.0	2							DC,M
		LEAR				0631.6	0633.3	2				III
		CULG				0632.0	0647.0	3				IIIG,N
		LEAR				0637.8	0647.0	2				III
		LEAR				0700.1	0708.6	3				III
		CULG				0700.5	0705.5	3				IIIGG
		CULG				0708.0	0708.5	3				IIIG

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07	0741	1327	WEIS				0744.7	0745.9	2				IIIG
	1331	1446	WEIS				0757.0	1423.0	2				IN
			LEAR				0809.1	0810.8	3				III
	0809	1453	BLEN				0809.4E	1453.0D	2				I
			WEIS				0809.4	0810.6	3				IIIG
			WEIS				0826.0	0827.7	3				IIIG
			LEAR				0826.5	0836.3	2				III
			BLEN				0827.1	0834.9	2				IIIG
			WEIS				0833.4	0836.4	3				IIIG
			WEIS				0847.7	0848.3	1				IIIG
			LEAR				0904.5	0905.5	2				III
			WEIS				0904.7	0905.8	2				IIIG
			LEAR				0913.8	0935.0	3				II
			WEIS				0913.8	0933.2	3				II HARM
			WEIS				0922.0	0923.6	2				IIIG
			BLEN				0922.2	0934.9	2				IIIGG
			BLEN				1015.5	1016.3	2				IIIG
			WEIS				1015.7	1016.1	1				IIIG
			WEIS				1034.4	1034.7	2				IIIG
			WEIS				1102.7	1103.2	2				IIIG
			WEIS				1134.6	1135.3	3				IIIG
			BLEN				1153.4	1153.5	1				III
			WEIS				1153.4	1153.9	2				IIIG
			WEIS				1203.7	1205.6	1				IIIG
			WEIS				1209.6	1209.7	1				IIIB
			BLEN	1219.5	1219.8	3							III
			WEIS	1219.5	1219.7	2							U
			BLEN	1223.3	1223.5	2							III
			WEIS	1223.3	1223.5	1							DCIM
			WEIS				1252.7	1253.2	3				IIIG
			WEIS				1314.2	1315.9	2				IIIB
	2023	2400	CULG				2023.5	2400.0					IS
			CULG				2024.0	2210.0					IIIS,W
			CULG	2026.0	2315.0	1							IN
			CULG				2029.0	2342.0	1				IIIN
			CULG	2031.0	2306.0	2	2031.0	2335.5	3	2031.0	2317.0	3	IIIG,V,N
			SGMR				2031.3	2033.0	2				V
			CULG	2034.5	2316.0	3							DCIM,N
			CULG				2104.0	2343.0	2				IIIN
			LEAR				2156.0	2203.6	1				III
			LEAR				2221.8	2224.1	1				III
			LEAR				2237.8	2244.8	1				III
			LEAR				2258.6	2340.0	2				G
			CULG	2340.0	2400.0	3	2343.0	2400.0	3				IV
			CULG							2341.0	2400.0	3	SWF
			LEAR				2342.3	2344.1	1				III
			LEAR				2343.1	2343.3	1				III
			CULG	2344.0	2346.0	3	2343.5	2400.0	3	2350.0	2400.0	3	II
			LEAR				2344.1	0021.6	3				IV
08			CULG							0000.0	0045.0	3	SWF
			CULG				0000.0	0233.5	1				IS,DC
			CULG	0000.0	0025.0	3	0000.0	0030.0	3				IV
	0000	0723	CULG				0000.0	0023.5	3	0000.0	0013.5	3	II
			CULG				0003.0	0625.5	3				IIIN
			CULG				0017.0	0431.5	3	0017.0	0431.5	3	IIIG,N
			LEAR				0021.6	0000.0	1				CONT
			LEAR				0030.5	0030.8	2				III
			LEAR				0119.1	0124.0	3				III
			CULG	0119.5	0123.5	2	0119.0	0124.0	3	0119.5	0123.5	3	IIIGG,V
			CULG	0119.5	0124.0	3							DCIM
			CULG	0119.5	0533.5	2	0022.0	0719.5	2				IIIN
			CULG	0142.0	0638.5	1	0041.5	0721.5	1				IIIN
			CULG	0205.5	0208.5	3							DCIM
			LEAR				0205.6	0208.1	2				III
			CULG	0206.0	0208.0	1	0206.0	0208.0	3	0206.0	0208.0	2	IIIGG
			CULG				0210.5	0702.0	1				RSDP,N
			LEAR				0228.1	0233.1	3				III
			CULG	0228.5	0234.0	3							DCIM
			CULG	0229.5	0232.0	2	0228.0	0233.0	3	0228.5	0233.0	3	IIIGG
			CULG				0233.5	0723.5	2				IS,DC

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08			CULG							0255.0	0335.0	1	SWF
			CULG	0358.0	0401.5	2							DCIM
			LEAR				0421.1	0424.0	3				V
			CULG	0421.5	0617.5	2							DCIM,N
			LEAR				0430.3	0431.6	2				III
			LEAR				0616.3	0626.1	2				III
			LEAR				0725.8	0731.6	3				III
			WEIS				0746.0	1416.0	2				IN
	0741	0831	WEIS				0756.4	0756.7	2				IIIG
			WEIS				0759.6	0759.9	2				DP
			WEIS				0801.7	0803.7	1				IIIG
			WEIS				0816.6	0817.3	2				IIIG
			LEAR				0833.6	0837.1	2				III
	0821	1457	BLEN				0833.8	0834.1	2				III
			LEAR				0837.8	0841.8	3				III
	0836	1445	WEIS				0837.8	0839.6	3				IIIGG
			BLEN	0838.0	0838.8		0837.8	0838.9	3				IIIG,V
			WEIS				0841.7	0841.9	3				IIIB
			BLEN	0902.1	0902.2	1							IIIB
			WEIS				0902.2	0902.4	2				IIIG
			WEIS				0936.7	0937.3	1				IIIG
			BLEN	0939.2	0942.2	2							IIIGG
			WEIS				0943.7	0943.0	1				IIIG
			BLEN	0955.6	0955.7	1							IIIB
			BLEN	1001.3	1001.4	1							IIIB
			WEIS				1010.6	1011.2	2				IIIG
			WEIS				1022.4	1022.5	1				IIIB,DP
			WEIS				1024.3	1026.3	3				IIIG
			BLEN				1025.7	1026.0	2				IIIB
			BLEN				1030.0	1457.0D					IN
			WEIS				1031.7	1034.1	1				IIIG
			WEIS				1036.7	1039.7	3				IIIG
			WEIS				1042.9	1043.9	2				IIIG
			BLEN	1108.4	1108.8	1							III
			BLEN	1115.6	1116.0	3							IIIGG
			WEIS				1115.6	1116.0	2				DCIM
			WEIS				1202.7	1202.3	2				IIIB
			BLEN				1209.1	1209.3					III
			WEIS				1209.1	1209.3	3				IIIGU
			WEIS	1216.3	1216.7	1							DCIM
			BLEN	1230.5	1230.6	2							III
			WEIS				1254.6	1254.9	2				IIIG
			BLEN	1338.4	1357.8	3							DCIM
			WEIS	1347.5	1358.0	2							DCIM,CONT
			BLEN				1412.9	1457.0D	3				IV
			WEIS				1421.4	1445.0	3				IV
			WEIS				1421.8	1421.9	2				IIIB
			WEIS				1424.7	1424.8	2				IIIB
			WEIS				1426.6	1441.0	3				IIIGG
			WEIS				1440.8	1445.0	3				CONT
	2023	2400	CULG				2024.0	2314.0	1				RSDP,N
			CULG	2029.0	2349.0	1	2038.5	2342.0	1				IN
			CULG				2050.0	2302.0	1				IIIN
			CULG				2051.0	2052.0	3				IIIG,U
			CULG				2143.5		3				IIIB,U
			LEAR				2240.0	1041.0	1				CONT
			LEAR				2258.6	2340.0	2				G
			CULG	2300.5	2302.5	1							IIIG
			LEAR				2342.3	2344.1	1				III
			CULG				2359.0	2359.5	2				IIIG
09	0000	0724	CULG				0021.0	0724.0	1				IS
			CULG	0033.0	0451.0	1							IN
			CULG				0057.5	0721.0	1				RSDP,N
			CULG	0155.0		1							IIIB
			CULG	0232.0		3							IIIB
			LEAR				0356.3	0359.6	2				III
			CULG				0356.5	0358.5	3	0356.5	0358.0	2	IIIG,V
			LEAR				0404.3	0404.6	1				III
			CULG	0404.5		3	0404.5		3				IIIB
			CULG	0423.5	0459.5	2	0406.0	0644.0	2				IIIN

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09			CULG				0440.0	0441.0	3				IIIG,U
	0830	1453	BLEN				0904.3	0907.3	2				IIIG
	0744	1445	WEIS				0906.9	0907.1	2				IIIB
			WEIS				0916.2	0916.3	1				IIIB
			BLEN				0950.0	1453.0D	2				IN
			WEIS				1001.2	1001.3	2				IIIB
			WEIS				1028.3	1039.9	1				DP
			WEIS				1105.9	1108.7	2				IDP
			WEIS				1130.8	1131.0	2				IIIG
			WEIS				1132.9	1135.2	1			II	
			WEIS				1158.8	1203.8	1			II	DP
			WEIS				1254.0	1300.0	1				DP
			WEIS				1405.8	1406.0	2				IIIB
	2024	2400	CULG				2024.0	2400.0	1				IS
			CULG	2026.0		1	2026.0	2026.5	3				IIIG
			CULG	2031.0	2031.5	1	2029.0	2031.5	2				IIIN
			LEAR				2243.0	1042.0	1				CONT
			CULG	2301.0		1							IIIG
			CULG				2338.0	2339.0	1				IIIG
10	0000	0724	CULG				0000.0	0536.5	1				IS
			CULG				0017.5	0019.5	2	0017.5	0018.5	1	IIIG,V
			LEAR				0017.5	0022.0	2				III
			CULG							0024.0	0028.5		SWF,W
			CULG				0029.0	0031.5	1			II	
			CULG				0046.5		3				IIIG,U
			LEAR				0046.5	0046.6	1				III
			CULG				0133.0	0722.0	1				RSDP,N
			CULG				0210.0		2				IIIB
			CULG	0235.0	0722.5	1							IN
			CULG							0244.0	0255.0	1	SWF
			LEAR				0251.6	0252.0	1				III
			CULG				0358.0	0359.0	3	0358.5	0359.0	3	IIIB
			LEAR				0358.1	0358.6	2				III
			CULG							0408.0	0440.0	2	SWF
			CULG				0439.5	0716.0	2				IIIN
			CULG	0442.5		1	0442.5	0443.0	3				IIIG,U
			CULG				0532.0	0532.5	3	0532.5		3	IIIG
			CULG				0536.5	0724.5	2				IS
			CULG	0541.5	0544.0	2							DCIM
			LEAR				0630.3	0631.0	2				III
	0745	1232	WEIS										
			WEIS				0809.8	0809.9	1				IIIB
	0830	1349	BLEN				0830.0	1349.0					IN
	1254	1446	WEIS				1336.0	1417.0	2				IN
			WEIS				1340.5	1341.3	2				IIIG
			PALE				1730.0	0305.0	2				CONT
			PALE				2013.3	2013.8	2				III
			CULG				2024.5	2400.0	3	2110.0	2146.5	2	IS,C
	2024	2400	CULG				2024.5	2400.0					IIIS,W
			CULG				2026.0	2400.0	2				RSDP,N
			CULG				2032.5	2345.0	3	2033.0	2034.5	3	IIIG,V
			PALE				2032.8	2034.3	2				V
			CULG	2057.5	2334.0	1							IIIN
			CULG				2116.5		1	2116.5		1	IIIB
			CULG	2147.0	2147.5	1	2147.5	2149.0	3	2148.5	2149.5	2	IIIG
			LEAR				2151.0	1042.0	1				CONT
11			CULG				0000.0	0515.0					IIIS,W
	0000	0725	CULG				0000.0	0725.0	2				IS,C
			CULG				0001.0	0724.0	2				RSDP,N
			CULG				0002.0	0515.0	1				IIIN
			CULG				0003.0	0102.0	2	0003.0	0651.0	2	IIIN
			LEAR				0003.0	0003.3	1				III
			LEAR				0031.8	0032.6	3				III
			PALE				0031.8	0032.5	3				V
			CULG				0032.0	0032.5	3	0032.0	0325.0	2	IIIG,V
			CULG	0033.5	0147.0	1							IS
			CULG				0102.0	0137.0	2				IIIS
			CULG				0122.0		3				IIIB,U
			CULG				0137.0	0515.0	2				IIIN

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11			CULG	0141.0	0142.0	3	0141.0	0142.0	3				IIIG
			CULG	0147.0	0702.0	1							IN
			CULG				0352.0		3	0352.0		1	IIIB
			LEAR				0439.1	0443.3	3				III
			CULG	0439.5	0442.0	2	0439.0	0443.0	3	0439.0	0443.0	3	IIIGG,V
			CULG							0443.0	0505.0	2	SWF
			CULG				0446.0	0508.0	3				II
			CULG				0500.0	0725.0	3				RSDP,N
			CULG				0515.0	0725.0	1				IIIS
			CULG				0623.5		3				IIIB
			WEIS				0749.0	1444.0	3				IS
	0746	1444	WEIS				0749.0	1444.0	2				CONT
			WEIS				0918.0	1343.0	2				IIIN,DP
	0835	1456	BLEN	0929.7	0930.1	2							IIIG
			LEAR				0947.8	0952.0	2				III
			WEIS				0948.0	0951.9	3				IIIGG
			BLEN	0949.4	0949.9	2							IIIG
			SGMR				1401.1	1807.6	1				CONT
			SGMR				1405.5	1409.1	1				V
			SGMR				1536.3	1538.0	3				V
			SGMR				1946.6	1957.1	2				V
			CULG				2025.0	2400.0					IIIS,W
			CULG	2025.0	2210.0	1	2025.0	2400.0	3				IS,C,DC
	2025	2400	CULG				2025.0	2148.5	2				S,RSDP
			CULG				2049.5	2050.0	2				IIIG
			CULG				2057.0	2111.0	3	2056.5	2109.0	2	IIIS
			CULG				2112.0	2132.0	3				II
			LEAR				2151.0	1043.0	2				CONT
			CULG	2201.5	2202.0	1							IIIG
12	0000	0713	CULG				0000.0	0713.0	3				IS,C,DC
			CULG	0421.5	0713.0	1							IS
			WEIS				0809.0	1445.0	2				ISDP
	0747	1445	WEIS				0809.0	1436.0	2				CONT
			WEIS				1037.4	1037.9	1				IIIB
			WEIS				1051.8	1051.9	2				DCIM
	0838	1246	BLEN	1055.2	1055.3	2							IIIB
			WEIS				1055.2	1055.3	2				IIIB
			BLEN	1132.7	1132.9	2							IIIG
			WEIS				1132.7	1133.2	2				IIIG
			BLEN	1147.1	1147.2	2							IIIB
			WEIS				1147.1	1147.3	2				IIIG
			WEIS				1149.3	1149.6	1				DCIM
			BLEN	1204.0	1204.1	2							IIIB
			WEIS	1204.0	1204.3	2							DCIM
			PALE				1706.0	0300.0	2				CONT
			PALE				1930.0	0322.0	2				CONT
			CULG				2026.0	2400.0	1				IIIS
	2026	2400	CULG	2026.0	2400.0	1	2026.0	2400.0	3				IS,C,DC
			CULG				2027.5	2400.0	1				RSDP,S
			CULG				2050.5	2353.0	2				IIIN
			CULG	2136.0	2137.5	1							IIIN
			LEAR				2152.0	1044.0	1				CONT
			CULG	2311.0	2311.5	3	2311.5		3				IIIG
13			CULG				0000.0	0649.0	1				IIIS
	0000	0726	CULG	0000.0	0726.0	1	0000.0	0726.0	2				IS,C,DC
			CULG				0004.5	0649.5	1				RSDP,N
			CULG				0010.0	0649.0	2				IIIN
			CULG	0134.5	0136.0	2							IIIG
			CULG	0257.5	0258.0	3	0257.5	0258.0	3				IIIG
			LEAR				0323.8	0330.0	3				V
			CULG	0324.0	0327.5	3	0324.0	0329.5	3	0324.0	0329.0	3	IIIGG,V,Z
			CULG	0325.5	0328.0								CONT,W
			CULG							0327.5	0342.0	2	SWF
			LEAR				0347.3	0352.8	1				III
			CULG				0403.5	0404.5	2	0404.0	0404.5	1	IIIG
			CULG				0641.5	0724.5	2				RSDP,N
			CULG				0649.0	0726.0	2				IIIS
	0740	1134	WEIS				0753.0	1445.0	3				CONT
	1140	1445	WEIS				0758.0	1439.0	2				IDP

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13			LEAR				1000.0	1049.0	1				UNCLF
			SGMR				1246.1	2045.0	1				CONT
			SGMR				1256.8	1308.0	1				II
			PALE				1752.8	0323.0	2				CONT
			CULG				2025.0	2400.0	2				IIIS
	2025	2400	CULG				2025.0	2400.0	3				IS,C,DC
			CULG				2027.0	2359.0	2				RSDP,N
			LEAR				2152.0	1044.0	1				CONT
14			CULG				0000.0	0725.5	2				IIIS
	0000	0725	CULG				0000.0	0725.5	2				IS,C,DC
			CULG	0000.5		1							I
			CULG				0012.0	0015.5	2				II
			CULG				0013.0	0725.5	1				S,RSDP
			CULG				0033.0	0038.0	2				II
			LEAR				0203.6	0204.1	1				III
			CULG	0520.5	0521.5	1							IS
			CULG				0606.0	0722.0	3				IIIN
			LEAR				0733.6	0740.5	3				III
	0748	1445	WEIS				0752.0	1445.0	2				CONT
			WEIS				0754.0	1416.0	2				IN,DP
			WEIS				0823.3	0825.9	3				IIIG
			LEAR				0825.5	0825.8	2				III
			WEIS				0847.3	0848.1	1				DCIM
			WEIS				0907.3	0910.4	3				IIIG
			WEIS				0942.6	0942.7	1				IIIB
			WEIS				1103.3	1105.0	2				IIIG
			WEIS				1104.5	1106.7	1				DCIM
			WEIS				1239.2	1242.7	3				IIIG
	0923	1455	BLEN				1239.3	1242.5	3				IIIG
			WEIS				1428.3	1428.4	1				IIIB
			SGMR				1510.3	1752.0	1				CONT
			PALE				2012.1	0320.0	2				CONT
			SGMR				2012.3	2023.6	1				GG
			CULG				2025.5	2035.0	3				IIIS
			CULG				2025.5	2400.0	1				IIIS
	2025	2400	CULG				2025.5	2245.0	3				IS,C,DC
			CULG				2035.0	2340.0	2				IIIN
			LEAR				2153.0	1045.0	1				CONT
			CULG				2245.0	2400.0	2				IS,C,DC
			CULG	2258.0	2258.5	2	2257.5	2258.0	3				IIIG
			CULG				2339.0		3				IIIB
15			CULG				0000.0	0244.0	1				IIIS
	0000	0727	CULG				0000.0	0230.0	2				IS,C,DC
			CULG				0002.0	0317.5	2				IIIN
			CULG				0104.5	0105.0	3				IIIG
			LEAR				0104.8	0105.3	2				III
			LEAR				0141.8	0144.0	2				III
			CULG				0143.0	0145.0	3				UNCLF
			LEAR				0156.8	0224.0	3				IV
			PALE				0156.8	0157.8	2				II
			CULG				0157.0	0157.5	3	0157.0	0157.5	2	IIIG
			CULG	0158.0	0201.0	3	0158.0	0201.0	3	0158.0	0201.0	3	IIIGG,V
			CULG	0158.5	0210.0	3							IV
			CULG							0159.5	0220.0	3	SWF
			CULG				0200.0	0227.0	3	0201.0	0023.0	3	II N
			CULG				0201.0	0220.0	3				IV
			LEAR				0201.3	0209.0	3				II
			CULG				0230.0	0727.0	1				IS,C,DC
			CULG	0302.0	0350.0	2							CONT
			CULG				0408.0	0408.5	3				IIIG
			CULG				0526.0	0649.5	1				IIIN
	0709	1425	WEIS				0826.0	1125.0	2				IN,DCDP
	0830	1455	BLEN				1443.2	1443.3	2				IIIB
			SGMR				1632.1	1650.6	2				IV
			SGMR				1703.5	1706.1	1				V
	2027	2400	CULG				2027.0	2400.0	1				IS,C,DC
			CULG				2045.5	2047.5	2				IIIG
			CULG	2149.0	2214.0	1							CONT
			CULG	2150.0	2153.0	1							DCIM,N

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15		CULG							2153.0	2205.0	1	SWF
		CULG	2159.5	2400.0	1							IS
		CULG				2201.0	2223.5	1				IIIS
		CULG	2201.5	2202.0	2							CONT
		LEAR				2227.0	0249.0	1				CONT
16		CULG	0000.0	0334.0	1							IN
0000	0727	CULG				0000.0	0105.0	1				IS,C,DC
		CULG				0105.0	0206.0					IS,W,C
		CULG				0320.5	0539.0	1				IIIN
		LEAR				0423.0	0425.8	1				III
		LEAR				0524.1	0532.1	1				III
		CULG				0524.5		3				IIIG
		CULG	0535.5	0538.0	2							IS
		CULG	0625.0	0729.5		0617.5	0729.5					IS,W
		LEAR				0724.6	0725.0	1				III
		LEAR				0739.8	0740.3	1				III
		LEAR				0814.3	0816.3	1				III
0830	1455	BLEN				0950.5	1455.0D	2				IN
0750	1122	WEIS				0951.3	0956.3	2				IIIG
		LEAR				0952.1	0955.5	1				III
		WEIS				0959.8	1026.0	3				DCIM
		BLEN	1002.7	1020.9	2	1002.7	1115.0	3				IV
		WEIS				1002.8	1026.2	3				IIIGG
		LEAR				1004.1	1025.0	2				GG
		WEIS				1004.3	1050.0	3				IV
		WEIS				1129.3	1443.5	2				IN
1129	1445	WEIS				1144.0	1244.0	2				IIIN
		WEIS				1209.6	1216.2	3				IIIGG
		BLEN	1214.5	1215.6	2							IIIGG
		BLEN				1240.3	1244.3	3				IIIGG
		WEIS				1418.2	1427.1	3				IIIGG
		SGMR				1418.3	1420.5	1				V
		BLEN	1419.2	1426.8	3	1418.0	1435.2	3				IIIGG,V
		WEIS				1435.0	1435.3	2				IIIG
		SGMR				1522.5	1622.1	1				CONT
		SGMR				1653.6	1654.1	1				V
		SGMR				1720.6	1720.8	1				III
		PALE				1730.0	0322.0	2				CONT
2027	2400	CULG				2035.0	2050.0	2				IIIS
		CULG	2040.5	2041.0	2							IS
		CULG				2102.0	2321.5	1				IIIN
		CULG				2106.0	2118.5	2	2111.5	2118.5	1	IIIG,N
		LEAR				2250.5	2250.8	1				III
17	0000	0727	CULG									
		CULG	0145.5	0149.5	3	0145.5	0158.0	3	0146.5	0159.0	3	IIIS
		LEAR				0146.1	0146.6	2				III
		CULG							0147.0	0205.0		SWF,W
		CULG	0147.5	0151.5	3	0149.5	0153.5	3				II
		LEAR				0148.1	0201.6	3				GG
		PALE				0148.1	0158.1	3				II
		CULG	0148.5	0158.0	2							CONT
		CULG				0201.5	0236.0	1	0208.0	0212.5	1	IIIS
		LEAR				0204.6	0835.0	1				CONT
		CULG				0307.5	0308.5	1				DC
		CULG				0325.0	0727.5					IS,W,C
		CULG				0440.0	0442.5	2				IIIG
		CULG	0519.5	0521.0	1							DCIM
		CULG				0701.0	0701.5	3				IIIG
		LEAR				0701.1	0701.5	2				III
0750	1009	WEIS										
1053	1445	WEIS				1108.3	1108.6	1				IIIG
		WEIS				1134.8	1135.4	3				IIIGG
0830	1455	BLEN				1134.9	1135.3	3				IIIG
		WEIS				1253.3	1253.6	1				IIIG
		PALE				1900.6	1906.6	2				II
		SGMR				1900.6	1913.8	2				V
		CULG				2032.5	2045.0	3				II
2030	2400	CULG	2033.5	2057.5	1	2030.0	2157.0	2				IS,C
		CULG	2111.5	2150.5	2							CONT

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17			CULG				2116.0	2159.5	3	2126.0	2159.0	2	IIIS
			CULG	2146.5	2148.0	1							CONT
			LEAR				2146.5	2150.0	2				V
			CULG				2148.0	2155.0	3				II
			CULG							2150.0	2158.0		SWF,W
			CULG							2251.0	2310.0		SWF,W
18			LEAR				0001.8	0002.3	1				III
	0000	0728	CULG				0117.5	0120.0	2	0117.5	0120.0	1	IIIG
			LEAR				0117.5	0119.8	1				III
			CULG				0210.0	0542.5	2	0210.0	0421.5	2	IIIN
			LEAR				0210.0	0231.3	1				G
			CULG				0226.0	0635.0	1				IIIN
			CULG	0301.0	0302.5	1							DCIM
			CULG				0301.5	0302.0	3	0301.5	0302.5	2	IIIG
			LEAR				0301.5	0308.3	1				V
			CULG				0353.0	0353.5	3				IIIB
			LEAR				0353.1	0400.3	1				V
			LEAR				0420.6	0421.1	1				III
			CULG	0447.5	0455.0	1							DCIM,N
			CULG	0500.5	0702.0	1							IN
			LEAR				0508.3	0518.6	1				CONT
			LEAR				0542.0	1047.0	1				CONT
			CULG				0551.0	0615.5	2				IIIS
			CULG				0559.0	0633.5	3	0633.0	0633.5	3	IIIN
			CULG	0633.5	0635.0	1	0622.0	0635.0	2				IIIN
			LEAR				0816.1	0836.3	3				GG
	1082	1505	BLEN				0823.2	0827.8	3				IIIGG
			BLEN				0831.2	0832.0	2				I
			BLEN	0832.7	0834.9	3	0832.7	0834.9					II
	0843	1207	WEIS										
			BLEN	0907.8	0980.2	3							IIIG
			BLEN	0913.3	0936.4	3	0913.3	0936.4	3				DCIM
			BLEN				0954.8	1505.0D					IN
			BLEN	1247.8	1305.5	3	1247.8	1305.5	3				DCIM
	1257	1427	WEIS										
			BLEN	1352.2	1411.4	3	1356.6	1409.2	3				DCIM
			SGMR				1357.1	1358.0	1				V
			SGMR				1359.8	1400.0	2				III
			SGMR				1504.1	1509.6	2				III
			PALE				1722.0	0000.0	2				CONT
			PALE				1723.0	0310.0	2				CONT
	2028	2400	CULG				2034.0	2349.5	1				IN
			CULG	2053.0		1	2053.0		1				IIIB
			CULG				2122.5	2356.5	1	2320.0	2359.0	1	IIIN
			CULG	2152.5		3	2152.5		1				IIIG
			LEAR				2159.0	1047.0	1				CONT
			CULG				2200.0	2201.0	2				IIIGV
			CULG	2240.5	2241.0	2	2241.0	2245.5	2				IIIN
			CULG	2241.0	2357.5	1							DCIM,N
19	0000	0728	CULG	0059.0	0100.5	2							DCIM
			CULG				0122.5	0644.5	1				IIIN
			LEAR				0133.3	0140.6	2				GG
			CULG				0133.5	0141.0	3	0133.5	0140.0	3	IIIS
			CULG	0134.0	0139.0	1	0134.0	0140.0	3				IS
			CULG	0136.0	0140.0	3							CONT
			CULG							0138.0	0146.0		SWF,W
			CULG	0140.0	0156.0	1							IV
			CULG				0141.5	0144.0	1				II
			LEAR				0225.6	0232.5	2				III
			CULG	0226.0	0232.5	2	0225.5	0232.5	3	0226.0	0232.5	3	IIIG,N
			LEAR				0447.6	0455.1	2				V
			CULG	0448.5	0449.0	2	0448.5	0450.0	3	0448.5	0450.0	3	IIIG,V
			CULG				0452.5	0455.0	2				IIIG,G
			CULG	0453.0	0454.5	2							DCIM
			CULG	0453.0	0454.5	2							IS
			CULG				0503.0	0720.0	2				IIIN
			CULG	0526.5	0720.0	3							DCIM,N
			CULG				0614.5	0724.5	3	0614.5	0724.5	2	IIIG,N
			LEAR				0624.1	0624.6	2				III

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19			LEAR				0635.1	0642.0	2				III
			LEAR				0644.3	0654.0	3				III
			CULG				0645.5	0654.0	3	0646.0	0653.0	3	IIIG,G,N
			LEAR				0719.1	0720.1	2				III
			LEAR				0852.8	0911.0	2				GG
	0831	1052	WEIS				0853.0	0906.3	3				IIIG
	0820	1505	BLEN				0854.1	0907.3	3				IIIGG
			BLEN	0904.6	0913.6	3							DCIM,C
	1105	1445	WEIS										
			PALE				1722.0	0315.0	2				CONT
			SGMR				2006.3	2007.1	1				V
	2029	2400	CULG				2119.5	2121.5	2				IIIG
			CULG	2250.0	2258.5	1							DCIM,N
			CULG				2250.5	2251.0	2				IIIG
			LEAR				2250.6	2252.1	1				III
			LEAR				2257.0	2322.0	1				CONT
			CULG				2258.0	2258.5	1	2258.0	2258.5	1	IIIG
20	0000	0729	CULG				0000.5	0001.5	2	0001.0	0002.0	1	IIIG
			LEAR				0000.6	0001.1	1				III
			CULG							0023.0	0027.0		SWF,W
			LEAR				0049.8	0054.5	1				III
			CULG				0050.0	0235.0	1				IIIN
			CULG				0125.0	0128.0	3				IIIG,V
			LEAR				0126.0	0128.1	2				V
			LEAR				0128.8	0147.6	2			II	
			CULG				0129.0	0143.0	3			II	H
			LEAR				0234.6	0235.1	1				III
			LEAR				0244.3	0244.6	1				III
			CULG				0244.5	0245.0	2	0244.5	0245.0	2	IIIB
			LEAR				0330.0	0331.3	1				III
			LEAR				0339.0	0342.6	3				V
			CULG				0339.5		2				IIIB
			CULG	0340.5	0341.0	3	0340.5	0342.5	3	0340.5	0342.5	3	IIIG,V
			LEAR				0357.3	0359.6	1				III
			CULG				0357.5	0359.5	2	0357.5	0359.5	2	IIIG
			LEAR				0416.3	0417.6	1				III
			CULG	0417.0		1	0416.5	0418.0	3	0416.5	0418.0	3	IIIG
			LEAR				0655.3	0655.6	1				III
			CULG				0655.5		2				IIIB
			LEAR				0701.1	0702.3	1				III
			CULG				0701.5	0703.0	1				IS
			LEAR				0709.3	0710.8	1				III
			CULG				0709.5	0710.5	2				IIIG
			LEAR				0713.5	0759.0	1				CONT
	0801	1444	WEIS				0854.6	0855.3	2				IIIG
	0820	1505	BLEN	0858.2	0901.6	2	0859.4	0904.5	3				DCIM,IIIGG
			LEAR				0859.0	0911.1	2				GG
			WEIS				0859.4	0901.1	3				IIIGG
			WEIS				0903.9	0906.3	3				IIIG
			WEIS				0923.3	0925.3	3				IIIG,RS
			BLEN				0924.3	0925.4	3				IIIG
			LEAR				0924.3	0926.1	1				III
	2030	2400	CULG				2226.0	2337.0	2				IIIG,N
			LEAR				2226.1	2227.3	1				III
			LEAR				2251.3	2252.1	1				III
			CULG				2251.5		3				IIIB
			LEAR				2303.5	2304.0	1				III
21			LEAR				0039.8	0040.6	1				III
	0000	0730	CULG				0040.0	0040.5	3				IIIG
			CULG				0042.0	0638.0	2				IIIN
			CULG				0043.0	0637.0	1				IIIN
			LEAR				0112.8	0113.1	1				III
			LEAR				0202.5	0204.3	1				III
			LEAR				0212.0	0216.3	2				V
			CULG				0213.0	0215.0	3	0213.0	0214.0	2	IIIG
			CULG							0214.0	0221.0	2	SWF
			LEAR				0254.0	0254.3	1				III
			LEAR				0325.3	0325.6	1				III
			LEAR				0452.6	0500.6	1				III

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21			CULG							0502.5	0522.0	2	SWF
			CULG				0506.0	0508.0	1				II
			LEAR				0518.0	0534.0	1				CONT
			CULG				0525.0	0532.0	1				II
			CULG				0612.5	0615.0	3	0613.0	0614.5	1	IIIG,G
			LEAR				0612.5	0614.3	2				III
			LEAR				0624.6	0625.0	1				III
			LEAR				0636.6	0637.1	1				III
			LEAR				0637.6	0638.1	1				III
			CULG				0645.5	0649.0	3	0646.0	0647.0	3	IIIG,V
			LEAR				0645.6	0649.6	3				V
	0815	1505	BLEN										
	0754	1447	WEIS				1117.2	1117.4	2				IIIG
	2050	2400	CULG				2055.0	2056.0	2				IIIG
			CULG				2116.0	2117.5	2				IIIG
			CULG				2308.0	2310.0	1				IIIG
			LEAR				2309.5	2312.6	1				III
			CULG				2310.0		2				IIIB
			CULG				2312.0	2312.5	3	2312.0	2312.5	3	IIIG
			CULG				2326.0	2337.0	1				IIIN
			LEAR				2328.0	2329.1	1				III
			LEAR				2358.8	0000.5	1				III
			CULG				2359.0	2359.5	2	2359.0	2400.0	2	IIIG
22	0000	0730	CULG				0002.0	0002.5	1				IIIG
			CULG				0107.0		2				IIIB,U
			CULG				0133.0	0134.5	3	0134.0	0135.0	2	IIIG,V
			LEAR				0133.1	0139.5	2				III
			CULG	0207.0	0209.0	1	0207.0	0209.0	3	0207.5	0209.5	2	IIIG,G,V
			LEAR				0207.3	0209.8	2				V
			CULG				0421.0	0421.5	1				IIIG
			LEAR				0421.3	0421.8	1				III
			LEAR				0514.6	0515.3	1				III
			LEAR				0538.5	0542.0	1				III
			CULG				0541.5	0542.0	2				IIIG
			CULG				0705.0	0711.0	1				IIIN
			LEAR				0708.8	0711.3	1				III
			LEAR				0845.6	0853.8	1				III
			LEAR				0915.3	0915.5	1				III
			LEAR				0924.3	0933.6	1				III
	0815	1510	BLEN				0932.2	0933.4	2				IIIG
	0754	1422	WEIS				0932.2	0933.7	2				IIIG
	1427	1447	WEIS				0937.7	0938.2	1				IIIG
			WEIS				1024.9	2025.7	3				IIIG
			LEAR				1025.1	1025.6	1				III
			BLEN	1032.2	1033.1	2							III
			WEIS	1032.2	1033.2	2							DCIM
			WEIS				1034.9	1035.1	2				IIIB
			WEIS				1242.9	1244.2	1				IIIG
			BLEN				1413.2	1414.0	2				IIIG
			SGMR				1413.3	1414.1	1				V
			WEIS				1413.3	1414.4	3				IIIG
	1427	1447	WEIS										
	2031	2400	CULG				2049.0	2121.0	1				IIIN
			CULG				2119.5	2242.0	2				IIIN
			LEAR				2241.1	2242.0	1				III
			CULG	2346.0	2347.0	1	2346.0	2347.0	3	2346.5	2347.0	1	IIIG
			LEAR				2346.3	2347.0	2				III
23	0000	0731	CULG				0016.5	0537.0	2	0017.0	0018.0	1	IIIN
			LEAR				0016.6	0018.3	1				III
			CULG				0027.0	0231.5	1				IIIN
			LEAR				0213.3	0213.6	1				III
			CULG				0229.5	0230.0	3	0229.5	0230.0	2	IIIG
			LEAR				0229.5	0230.0	2				III
			LEAR				0508.0	0510.3	2				III
			CULG	0508.5	0509.0	2	0508.0	0510.0	3	0508.0	0510.0	3	IIIG,V
			CULG				0516.5	0558.0	1				IIIN
			LEAR				0526.6	0527.5	1				III
			LEAR				0535.8	0541.1	1				III
			CULG				0728.0	0730.0	3				IIIG

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23			LEAR				0728.0	0731.8	1				III
			LEAR				0746.3	0748.3	1				III
			LEAR				0856.0	0856.6	2				III
	0750	1448	WEIS				0856.1	0856.6	3				IIIG
			WEIS				1143.8	1144.4	2				IIIG
			WEIS				1147.2	1150.6	2				IIIG
	0815	1301	BLEN				1155.3	1155.9	2				IIIG
			WEIS				1155.6	1155.8	2				IIIG
			WEIS				1427.9	1429.0	3				IIIG,U
			SGMR				1428.0	1428.5	1				III
	2031	2400	CULG				2038.0	2038.5	2				IIIG
			CULG	2239.5	2240.0	2	2239.0	2240.5	2	2240.0		1	IIIG
			LEAR				2239.8	2240.3	1				III
			CULG				2258.5	2335.5	1				IIIN
			LEAR				2331.8	2334.1	1				III
			CULG				2333.0		2				IIIB
			LEAR				2346.3	2347.0	2				III
24	0000	0731	CULG				0047.0	0129.5	2				IIIN
			LEAR				0047.1	0047.8	1				III
			CULG				0115.0	0311.5	1				IIIN
			LEAR				0115.3	0115.6	1				III
			LEAR				0124.3	0129.3	2				III
			CULG				0124.5	0126.5	3	0125.0	0126.0	3	IIIGV
			PALE				0124.6	0125.6	2				V
			CULG				0126.5	0127.5	3	0127.0	0127.5	1	IIIG
			CULG				0147.0	0149.0	1				IIIG
			LEAR				0147.0	0149.1	2				V
			CULG	0148.0		1	0148.0		3	0148.0		2	IIIB
			LEAR				0208.5	0209.0	1				III
			LEAR				0303.1	0303.3	1				III
			CULG				0303.5		2				IIIB
			CULG				0453.5	0454.5	3				IIIG,U,V
			LEAR				0453.8	0454.5	1				III
			CULG				0542.0		2				IIIB
	1021	1448	WEIS				1202.3	1206.3	2				IIIG
			WEIS				1212.5	1212.8	2				IIIB
			WEIS				1214.7	1215.7	2				IIIG
			WEIS				1243.3	1244.4	3				IIIG
			WEIS				1248.1	1249.3	2				IIIG
			WEIS				1313.9	1314.2	2				IIIG
			WEIS				1316.6	1316.9	3				IIIB
			WEIS				1318.5	1319.0	3				IIIG
			PALE				1928.8	1929.1	2				III
			PALE				1937.8	1940.1	2				III
	2032	2400	CULG				2032.0	2255.0	1				IIIN
			CULG				2107.5	2256.5	2				IIIN
			CULG				2108.5	2125.0	3	2124.0	2125.0	3	IIIN,U
			PALE				2108.5	2110.3	1				III
			PALE				2124.3	2124.8	2				III
			LEAR				2253.0	2256.5	1				III
			CULG				2338.0	2338.5	3				IIIB,U
			CULG				2344.0	2345.0	3				IIIG,U
			LEAR				2344.1	2345.0	1				III
25			LEAR				0127.8	0129.1	2				III
	0000	0732	CULG	0128.5	0129.0	1	0128.0	0129.0	3	0128.5	0129.0	1	IIIG
			LEAR				0147.1	0147.5	1				III
			CULG				0147.5	0520.5	1				IIIN
			LEAR				0206.0	0210.3	1				III
			CULG				0209.5	0656.0	2				IIIN
			CULG	0243.5	0244.0	1	0243.5	0244.0	3				IIIG,U
			LEAR				044.1	0244.3	1				III
			CULG	0410.5		1	0410.0	0410.5	3				IIIG,U
			CULG	0418.5	0505.0	1							IN
			LEAR				0649.3	0649.5	1				III
			CULG				0654.0	0655.0	3				IIIG
			LEAR				0654.1	0655.1	1				III
			WEIS				0759.0	0911.0	1				IN
	0756	1334	WEIS				0759.0	0847.0	3				CONT
			WEIS				0841.6	0842.0	2				DCIM,U

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25		WEIS				1155.1	1155.5	2				IIIG
		WEIS				1203.1	1204.9	2				IIIG
		WEIS				1207.6	1207.8	1				IIIG
		WEIS				1223.3	1223.8	2				IIIG
		WEIS				1250.7	1252.7	3				IIIG
		SGMR				1251.3	1252.1	1				III
		WEIS				1255.3	1255.7	2				IIIG
		WEIS				1309.8	1310.0	2				IIIB
		SGMR				1345.0	1346.5	1				V
	1336	WEIS				1444.8	1446.9	3				IIIG
		WEIS				1454.3	1454.7	2				DCIM,RS
		SGMR				1754.1	1758.5	1				V
		PALE				1754.3	1758.8	1				III
		PALE				1947.6	1947.8	1				III
		PALE				2009.8	2010.8	2				V
		CULG				2032.0	2400.0					IIIS,W
	2032	CULG				2032.0	2400.0	1				IS,DC
		CULG				2034.5	2353.0	1				IIIN
		CULG				2059.0	2359.0	3	2131.5	2358.0	3	IIIG,N
		CULG				2129.5	2219.5	2				IIIN
		CULG	2129.5	2138.0	1							IIIS
		PALE				2131.1	2132.0	2				III
		PALE				2218.1	2218.8	3				III
		LEAR				2218.3	2218.6	2				III
		LEAR				2330.0	1051.0	1				CONT
		LEAR				2344.1	2345.0	1				III
		LEAR				2357.3	2358.5	2				III
		PALE				2357.3	2357.6	1				III
26		CULG				0000.0	0732.0					IIIS,W
	0000	CULG				0000.0	0732.0	1				IS,DC
		CULG				0001.5	0726.0	1				RSDP,N
		LEAR				0011.0	0015.5	3				III
		PALE				0011.1	0015.0	3			II	
		CULG	0011.5	0015.5	2	0010.5	0015.5	3	0011.0	0015.5	3	IIIGG,V
		CULG	0012.0	0014.5	2							CONT
		CULG	0012.0	0015.0	2							DCIM
		CULG							0015.0	0018.0		SWF,W
		CULG				0019.0	0021.5	2				IIIG
		CULG				0148.0	0729.0	1				IIIN
		CULG				0254.5	0255.0	2				IIIG
		LEAR				0254.8	0255.1	1				III
		CULG	0700.0		2							IIIG
	0756	WEIS				0803.0	1450.0	2				IS
		WEIS				0807.0	1336.0	2				IIIN,DP
		LEAR				0929.0	0937.0	3				III
		WEIS				0929.1	0937.0	3				IIIGG
		LEAR				0954.3	0956.5	2				III
		WEIS				0955.4	0957.6	3				IIIG
		WEIS				1035.4	1035.6	2				IIIG
		WEIS				1037.8	1043.6	3				IIIGG
		LEAR				1039.8	1041.1	2				III
	1020	BLEN				1042.2	1043.3	2				IIIG
		BLEN				1139.3	1144.2	2				IIIG
		WEIS				1143.9	1144.8	3				IIIG
		WEIS				1159.3	1200.8	3				IIIG
		WEIS				1254.9	1311.2	2				IIIGG
		BLEN				1256.2	1311.2	1				IIIG
		WEIS				1404.7	1404.9	2				IIIB
		SGMR				1404.8	1405.0	1				III
		BLEN				1416.2	1416.4	1				IIIG
		WEIS				1416.2	1416.9	2				IIIG
		SGMR				1416.6	1417.0	1				V
		WEIS				1430.1	1430.4	1				DCIM
		WEIS				1432.4	1434.7	2				IIIGG
		BLEN	1433.5	1433.7	3	1430.0	1434.4	2				IIIGG
		SGMR				1454.3	1454.6	1				III
		BLEN				1459.7	1508.0	2				IN
		SGMR				1459.8	1510.8	2				V
		PALE				1924.5	1925.1	1				III
		SGMR				1924.5	1925.0	1				V

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26			PALE				2025.8	2032.1	1				III
			CULG				2032.0	2400.0	1				IIIS
	2032	2400	CULG				2032.0	2400.0	2				IS,C,DC
			CULG				2032.5	2356.5	1				RSDP,N
			CULG				2034.5	2356.5	2				IIIN
			CULG	2044.0	2400.0	1							IN
			CULG				2217.5	2308.5	3	2243.0	2259.0	1	IIIG
			LEAR				2218.3	2218.6	1				III
			LEAR				2240.0	1051.0	1				CONT
			LEAR				2258.3	2258.8	1				III
			PALE				2258.3	2258.6	2				III
27			CULG				0000.0	0732.5					IIIS,W
			CULG				0000.0	0732.5	1				IS,C,DC
	0000	0732	CULG	0000.0	0725.0	1							IN
			CULG				0003.0	0639.0	1				RSDP,N
			CULG				0012.5	0707.0	2				IIIN
			CULG				0029.5	0654.0	1				IIIN
			CULG				0054.5	0732.0	3				IIIN
			LEAR				0119.8	0120.0	1				III
			CULG	0159.5	0200.0	3	0159.5	0200.0	1				IIIG
			LEAR				0311.8	0317.0	2				III
			CULG				0312.0	0317.0	3	0312.0	0317.0	2	IIIGG
			PALE				0316.5	0316.8	2				III
			CULG				0432.0	0436.0	3				IIIG
			LEAR				0432.1	0435.8	2				III
			CULG				0455.5	0512.0	1			II	
			LEAR				0523.5	0529.6	3				III
			CULG	0524.0	0528.5	3	0523.5	0529.5	3	0523.5	0529.0	3	IIIGG
			CULG	0524.0	0529.5	3							DCIM
	0756	1449	WEIS										IS,DC
			LEAR				0814.3	0824.0	2				III
			WEIS				0814.4	0816.3	3				IIIGG
			WEIS				0820.0	0824.3	3				IIIG
			WEIS				0842.6	0843.3	2				IIIG
	0830	1500	BLEN				0900.0	1500.0D					IC
			WEIS				0905.6	0905.7					IIIB
			WEIS				0947.7	0947.8	1				IIIB
			WEIS				0949.0	1405.0	2				CONT
			WEIS				1005.2	1005.9	1				IIIG
			WEIS				1128.7	1138.8	3				IIIGG,DCIM
			BLEN	1134.3	1136.3	3	1129.7	1137.7	2				IIIGG
			WEIS				1143.3	1143.9	2				IIIG
			WEIS				1202.9	1203.0	2				IIIG
			WEIS	1232.1	1233.8	2							DCIM
			BLEN	1232.2	1233.8	3							IIIG
			WEIS				1244.0	1249.8	2				IIIG,DCIM
			BLEN	1249.2	1249.8	2							IIIG
			WEIS				1325.3	1325.4	2				IIIB
			PALE				1838.3	1838.6	2				III
			SGMR				1838.5	1838.8	2				V
			PALE				1842.0	1842.3	2				V
			SGMR				1842.0	1842.3	1				V
			PALE				1944.3	1944.6	2				III
			CULG				2033.0	2400.0	1				IIIS
	2033	2400	CULG				2033.0	2400.0	2				IS,C,DC
			CULG	2037.0	2318.5	1							IN
			CULG	2037.5	2038.0	1	2037.5	2308.0	3				IIIN
			CULG				2042.5	2359.5	1				RSDP,N
			CULG				2044.0	2233.0	2				IIIN
			PALE				2051.6	2052.3	2				V
			LEAR				2159.0	1051.0	1				CONT
			CULG	2236.0	2339.5	2	2236.0	2340.0	3	2236.0	2339.5	2	IIIG,N
			LEAR				2236.0	2237.8	2				III
			PALE				2236.0	2237.6	3				III
			PALE				2249.8	0325.0	2				CONT
			LEAR				2304.3	2305.6	1				III
			LEAR				2331.8	2332.5	1				III
			LEAR				2338.3	2339.8	2				III
			PALE				2339.3	2339.6	2				III
28			CULG				0000.0	0733.0	1				II'S.

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Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
28	0000	0733	CULG				0000.0	0647.5	2				IS,C,DC
			CULG				0012.5	0710.0	1				RSDP,N
			CULG				0015.5	0717.5	2	0145.5	0600.0	1	IIIN
			LEAR				0027.5	0030.5	2				III
			CULG	0028.5	0036.5	1	0027.5	0033.0	3	0027.5	0340.0	1	IIIG,N
			CULG	0139.0	0704.5	1							IN
			LEAR				0212.1	0213.3	2				III
			CULG	0256.0	0311.0	2	0212.0	0304.0	3				IIIG,N
			LEAR				0257.3	0304.1	1				III
			LEAR				0543.8	0544.1	2				III
			CULG	0544.0	0619.0	2	0537.5	0652.0	3	0544.0	0608.0	2	IIIG,N
			LEAR				0606.5	0608.5	3				V
			LEAR				0618.8	0619.1	1				III
			CULG				0647.5	0733.0	3				IS,C,DC
			LEAR				0652.0	0652.3	2				III
	0757	1428	WEIS				0801.0	1451.0	2				IN,DPRSDC
	1433	1451	WEIS				0803.0	1144.0	2				CONT
			WEIS				0822.0	1303.0	2				IIIN
			WEIS				0834.3	0836.6	3				IIIGG
	0830	1455	BLEN				0834.4	0840.7	2				IIIGG
			LEAR				0834.5	0836.5	2				III
			LEAR				0839.6	0839.8	1				III
			WEIS				0839.7	0839.9	2				IIIG
			LEAR				0856.6	0857.8	2				III
			BLEN				0856.7	0857.2	2				IIIG
			WEIS				0856.8	0857.3	3				IIIG
			WEIS				0934.8	0937.1	2				IIIG
			BLEN				0936.2	0936.8	1				III
			WEIS				1132.2	1136.1	3				IIIGG
			BLEN				1132.5	1135.9	2				IIIGG
			BLEN				1158.3	1201.8	2				IIIG
			WEIS				1158.4	1158.7	3				IIIG
			WEIS				1201.4	1201.9	3				IIIG
			SGMR				1422.0	0000.0	1				CONT
			BLEN				1430.4	1431.5	2				IIIGG
			SGMR				1430.8	1431.5	1				III
			WEIS				1433.0	1451.0	2				CONT
			SGMR				1451.1	1457.3	1				III
			SGMR				1551.0	1553.1	1				III
			CULG				2033.5	2400.0	1				IIIS
	2033	2400	CULG				2033.5	2400.0	2				IS,C,DC
			CULG				2037.5	2248.5	1				RSDP,N
			CULG				2045.0	2356.5	3	2045.0	2322.5	2	IIIG,N
			CULG				2052.5	2351.0	2				IIIN
			LEAR				2202.0	1052.0	1				CONT
			LEAR				2225.3	2226.1	1				III
			CULG	2236.5	2238.0	3							IIIN
			CULG	2245.0	2349.0	2							IIIN
			PALE				2249.8	0000.0	2				CONT
			CULG	2259.0	2300.0	1							IS
29			CULG				0000.0	0235.0	2				IS,C,DC
	0000	0733	CULG				0000.0	0733.5	1				IIIS
			CULG				0024.5	0027.5	3	0024.5	0028.0	2	IIIG
			LEAR				0024.5	0027.6	2				III
			PALE				0024.5	0028.1	2				III
			CULG				0036.5	0732.5	2				IIIN
			CULG				0235.0	0733.5	1				IS,C,DC
			CULG	0244.0	0244.5		0244.0	0245.0	3	0244.0	0245.0	3	IIIG
			LEAR				0244.0	0245.1	2				III
			PALE				0244.3	0244.5	2				III
			CULG				0350.0	0351.0	3				IIIG,U
			LEAR				0612.3	0614.0	2				III
			CULG				0612.5	0613.5	3	0612.5	0613.5	3	IIIG
			LEAR				0629.8	0631.8	2				III
			CULG				0630.0	0631.5	3	0631.0	0631.5	3	IIIG
			CULG	0644.5	0645.5	3	0644.5	0645.0	2				IIIG
			CULG	0644.5	0659.5	3						IV	
			CULG							0645.0	0652.0	1	SWF
			CULG				0645.5	0711.0	3			II	
			LEAR				0647.6	0711.5	2			II	

SOLAR RADIO EMISSION
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Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
29		CULG	0659.5	0733.5	2							IV
0757	1452	WEIS				0822.0	1332.0	1				IN
		LEAR				0840.5	0907.0	3				G
		WEIS				0840.6	0840.9	2				IIIG
		WEIS				0843.6	0845.8	3				IIIG
		WEIS				0847.4	0848.1	2				IIIG
		WEIS				0852.6	0856.6	3				IIIG
		WEIS				0859.4	0901.2	3				IIIG
0830	1455	BLEN	0859.5	0901.1	2	0844.9	0906.9	2				IIIGG
		WEIS				0906.6	0906.9	2				IIIG
		BLEN				0951.1	0951.8	2				IIIG
		WEIS				0951.1	0951.9	3				IIIG
		WEIS				0953.4	0953.7	1				U
		WEIS				1021.2	1021.6	1				IIIG
		WEIS				1034.9	1036.6	3				IIIG
		BLEN				1035.3	1044.0	2				IIIGG
		WEIS				1038.0	1045.4	3				IIIGG
		WEIS				1108.1	1109.1	3				IIIG
		WEIS				1111.7	1114.7	3				IIIGG
		BLEN				1112.0	1336.5	1				IN
		WEIS				1135.1	1135.2	2				IIIB
		WEIS				1137.2	1137.4	1				IIIB
		WEIS				1224.4	1225.6	2				IIIG
		WEIS				1231.8	1232.4	2				IIIG
		WEIS				1236.6	1236.7	2				IIIB
		WEIS				1249.3	1255.3	2				IIIB
		WEIS				1303.9	1312.4	3				IIIGG
		BLEN				1307.0	1312.0	2				IIIGG
		WEIS				1332.1	1332.3	2				IIIB
		WEIS				1409.6	1412.5	2				IIIB
		WEIS				1415.3	1415.4	1				IIIB
		PALE				1930.3	1931.1	2				III
2034	2400	CULG				2034.0	2103.0	1				IN
		CULG				2034.5	2053.0	3				IIIS
		PALE				2034.5	2038.5	1				III
		PALE				2040.0	2043.8	2				III
		CULG	2042.5	2043.0	1							IIIG
		CULG				2123.5	2248.0	1				IIIN
		PALE				2135.1	2140.8	1				III
		CULG				2140.5	2149.0	3				IIIGG
		CULG	2141.0	2149.0	1	2129.0	2137.0	3				IIIG,N
		PALE				2142.3	0324.0	2				CONT
		CULG				2223.0	2257.5	2				IIIN
		LEAR				2302.8	2303.1	1				III
		LEAR				2345.1	2354.5	2				III
		PALE				2347.3	2351.0	3				III
		CULG				2347.5	2352.5	3	2348.0	2351.5	2	IIIGG
		CULG	2348.0	2349.5	3							DCIM
30		LEAR				0000.3	0003.1	1				III
0000	0734	CULG				0001.5	0630.0	1				IIIN
		CULG				0136.0	0715.0	2				IIIN
		LEAR				0136.1	0139.8	1				III
		CULG							0148.0	0205.0	2	SWF
		CULG	0148.0	0149.0	1							DCIM
		CULG	0153.0	0158.0	1							II
		CULG				0156.5	0158.5	3				IIIGG
		LEAR				0156.6	0206.3					III
		LEAR				0217.1	0220.8	2				III
		CULG	0219.0	0220.5	2	0217.0	0221.0	3	0217.5	0220.5	2	IIIG,N
		CULG				0335.5	0412.0	3	0337.0	0338.0	2	IIIG,N
		LEAR				0336.3	0338.6	2				III
		LEAR				0359.5	0417.0	1				G
		CULG				0415.0	0417.0	2				IIIG
		LEAR				0602.1	0607.0	3				III
		CULG	0603.5	0604.0	1	0603.5	0606.0	3	0604.0	0606.0	3	IIIG,V
		LEAR				0629.0	0633.1	1				III
		CULG	0709.5	0710.5	3	0709.0	0711.0	3	0709.5	0710.5	3	IIIN
		LEAR				0709.6	0711.0	3				III
		LEAR				0714.8	0715.3	1				III
		LEAR				0802.1	0802.5	1				III

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

DECEMBER 1982

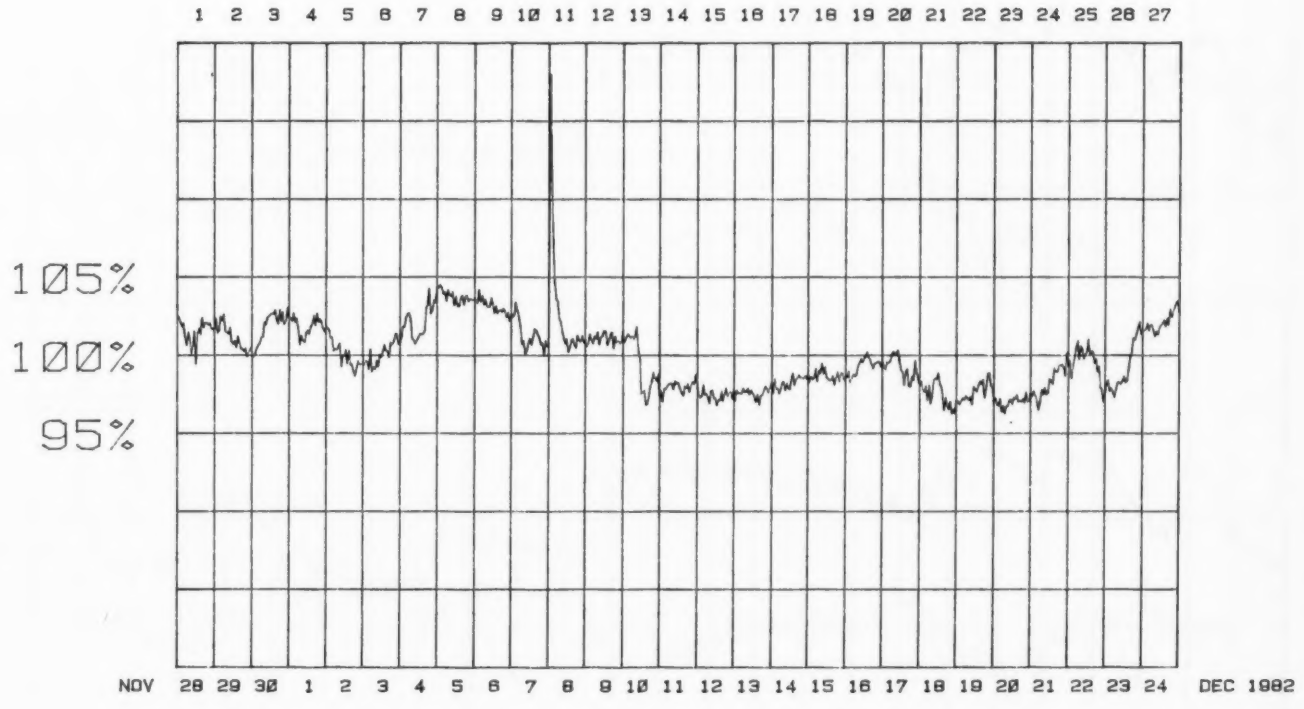
Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
30			LEAR				0902.6	0911.8	2				III
	0756	1453	WEIS				0902.8	0903.6	2				IIIB
			WEIS				0905.7	0905.8	2				IIIB
			WEIS				0909.2	0911.9	1				IIIG
			WEIS				1001.8	1004.9	1				IIIG
	0840	1455	BLEN				1013.8	1455.0D	2				IN
			LEAR				1013.8	1014.1	1				III
			WEIS				1013.8	1014.6	2				IIIG
			WEIS				1029.8	1030.2	1				IIIG
			WEIS				1035.7	1036.2	2				IIIG
			WEIS				1042.2	1043.4	2				IIIG
			WEIS				1206.8	1208.6	3				IIIG
			WEIS				1335.3	1336.8	3				IIIG
			WEIS				1340.4	1342.9	3				IIIGG
			BLEN				1341.0	1351.4	2				IIIGG
			WEIS				1346.6	1352.8	3				IIIGG
			SGMR				1346.8	1350.6	1				III
			BLEN	1410.4	1410.5	1							III
			WEIS	1410.4	1410.7	1							DCIM
	2035	2400	CULG				2046.5	2312.0	1				IIIN
			CULG				2120.5	2311.5	3				IIIN
			CULG				2155.0	2357.5	2				IIIG,N
			CULG	2218.0	2227.0	1							DCIM
			LEAR				2310.5	2311.5	1				III
			LEAR				2345.1	2354.5	2				III
			LEAR				2355.5	0002.1	2				III
			CULG				2358.0	2400.0	3	2358.5	2400.0	2	IIIGG,V
			CULG	2359.0	2400.0	1							IS
31	0000	0206	CULG				0001.0	0002.0	1				IIIG
			CULG	0016.0	0019.0	1							DCIM
			LEAR				0217.6	0220.6	1				III
	0230	0735	CULG				0233.0	0247.5	2				IIIN
			LEAR				0233.0	0234.8	1				III
			LEAR				0240.6	0245.3	2				III
			CULG				0317.0	0735.0	1				IIIN
			LEAR				0327.8	0330.1	1				III
			CULG				0328.0	0535.0	2				IIIN
			LEAR				0431.3	0437.3	1				III
			LEAR				0524.8	0536.1	1				G
			CULG				0536.0		3				IIIB
			LEAR				0554.3	0554.6	1				III
			CULG				0729.5	0730.0	3				IIIG
			LEAR				0729.5	0730.1	2				III
			LEAR				0801.6	0807.5	1				III
	0757	1359	WEIS				0807.3	0807.5	2				IIIB,U
			LEAR				0828.3	0831.6	1				III
			LEAR				0908.1	0908.3	1				III
	0840	1340	BLEN				1010.6	1310.3	2				IN
			LEAR				1010.6	1011.0	2				III
			WEIS				1010.7	1011.6	3				IIIG
			WEIS				1033.9	1034.2	2				IIIG
			WEIS				1101.3	1101.5	2				IIIB,U
			WEIS				1126.3	1126.6	2				IIIG
			WEIS				1128.2	1130.3	3				IIIG
			WEIS				1156.1	1156.6	3				IIIG
			WEIS				1239.7	1240.2	2				IIIG
			WEIS				1308.3	1310.7	2				IIIG
			BLEN				1331.2	1331.5	3				IIIGG
			WEIS				1331.2	1331.9	3				IIIG
	1426	1455	BLEN										
	1418	1453	WEIS				1446.9	1447.1	2				IIIG
			WEIS				1448.2	1448.5	1				IIIB
			WEIS				1452.1	1452.3	1				IIIB
			PALE				1927.8	1928.8	1				III
			PALE				1958.1	2000.8	2				III
	2035	2400	CULG				2040.0	2346.0	1				IIIN
			CULG				2127.5	2317.0	2				IIIN
			CULG				2216.5	2227.5	1				IIIS
			LEAR				2219.8	2220.0	1				III
			CULG				2220.0		2				IIIB
			LEAR				2316.8	2317.1	1				III
			LEAR				2355.5	0002.1	2				III

COSMIC RAY INDICES
(Neutron Monitors)
December 1982

Dec 1982	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	TOKYO Average (cts/h)/100	HUANCAYO Average (cts/h)/100
1	3906	6336.1	5871.8	5361.6	---	3438.7	1687.0
2	3836	6218.0	5855.3	5325.4	---	3444.5	1684.6
3	3839	6191.7	5859.3	5343.5	---	3447.6	1689.3(38)
4	3919	6342.4	6001.5	5467.7	----	3489.7	1710.4
5	3979	6446.7	6063.7	5512.5	3524.7(6)	3509.2	1721.8
6	3954	6411.5	6038.2	5509.8	3495.9	3505.7	1719.9
7	3884	6295.4	5966.3	5406.6	3449.0	3477.5	1700.8
8	3944	6394.8	6064.7	5445.1	3483.7(30)	3478.2	1706.5
9	3876	6289.3	5997.8	5411.4	3439.2(12)	3480.3	1705.8
10	3809	6184.8	5881.5	5339.8	3378.7	3445.9	1686.0
11	3758	6090.3	5781.7	5221.0	3309.9	3395.9	1667.5
12	3738	6067.5	5764.7	5201.0	3285.9	3388.9	1664.3
13	3744	6068.1	5792.2	5224.5	3299.8	3409.2	1667.5
14	3769	6092.4	5787.5	5269.2	3326.8	3433.0	1674.7
15	3785	6109.3	5784.9	5248.5	3318.0	3446.1	1683.8
16	3810	6153.5	5828.5	5283.0	3349.7	3449.8	1693.3
17	3803	6148.7	5861.2	5312.1	3363.5	3450.8	1696.4
18	3739	6055.8	5756.9	5209.8	3288.1	3391.6	1676.3
19	3746	6069.4	5735.9	5202.6	3280.0	3371.8	1677.0
20	3722	6030.0	5699.3	5180.3	3263.8	3407.2	1675.6(38)
21	3770	6104.1	5763.0	5242.1	3304.8	3437.6	1690.3
22	3818	6177.5	5826.0	5304.2	3344.0	3445.2	1689.7
23	3807	6146.5	5805.3	5273.1	3346.3	3426.2	1691.0
24	3918	6319.3	5947.5	5427.9	3471.1	3479.9	1712.8
25	3923	6307.6	5953.0	5429.2	3461.8	3479.5	1710.5
26	3902	6299.3	5955.0	5406.0	3452.9	3417.6	1706.8
27	3883	6271.6	5909.0	5407.0	3402.5	3450.9	1694.5
28	3806	6166.3	5771.0	5266.8	3318.2	3427.6	1677.9
29	3795	6127.0	5802.4	5276.5	3334.7	3404.5	1685.2
30	3829	6151.5	5876.3	5315.1	3373.5	3427.3	1691.0(28)
31	3878	6236.9	5925.7	5383.3	3408.4	3432.2	---
Mean	3835	6203.4	5868.6	5329.2	3364.8	3441.6	1691.4

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

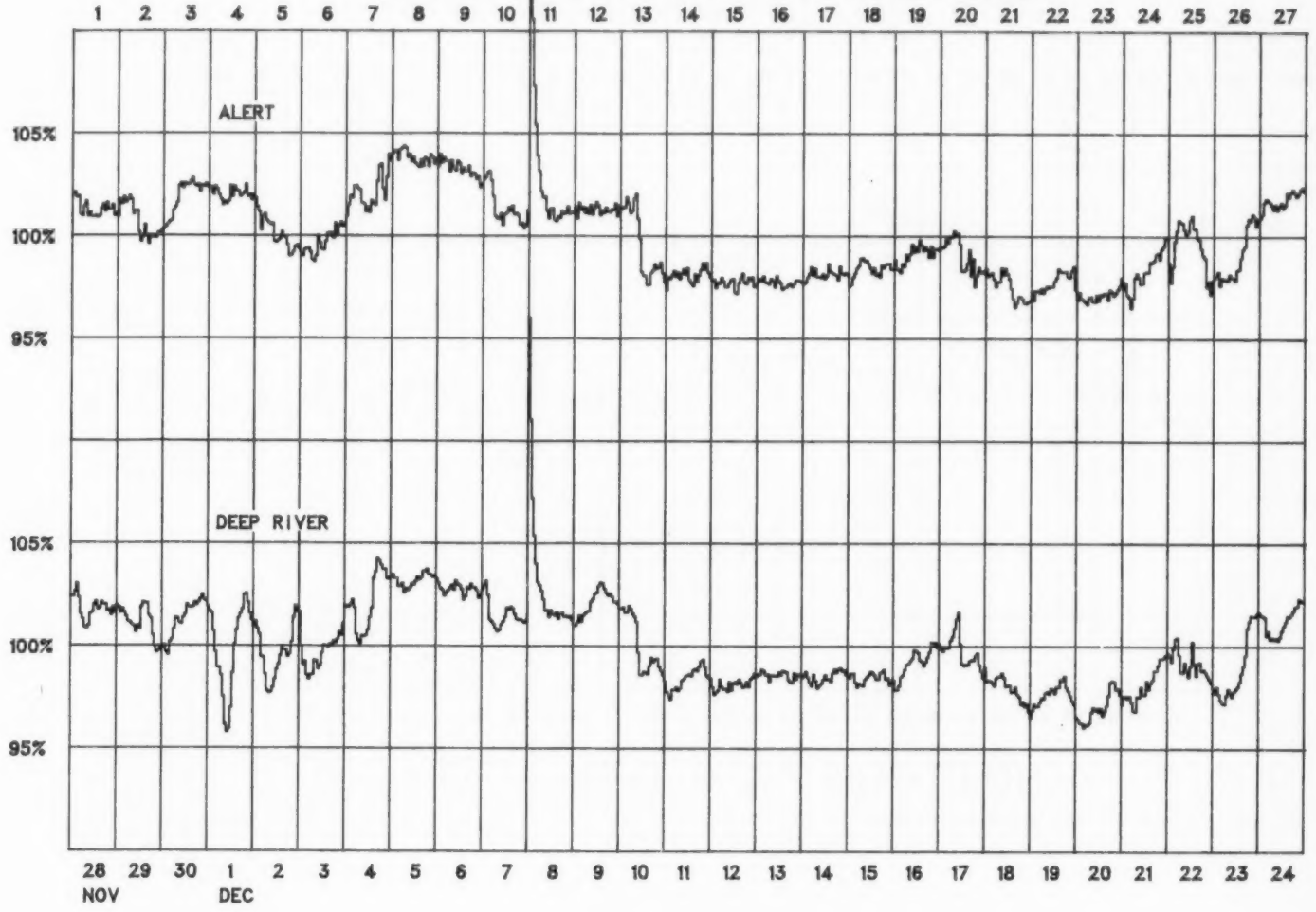
THULE NEUTRON MONITOR



BARTELS ROTATION 2041

COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2041 (November 1982–December 1982)



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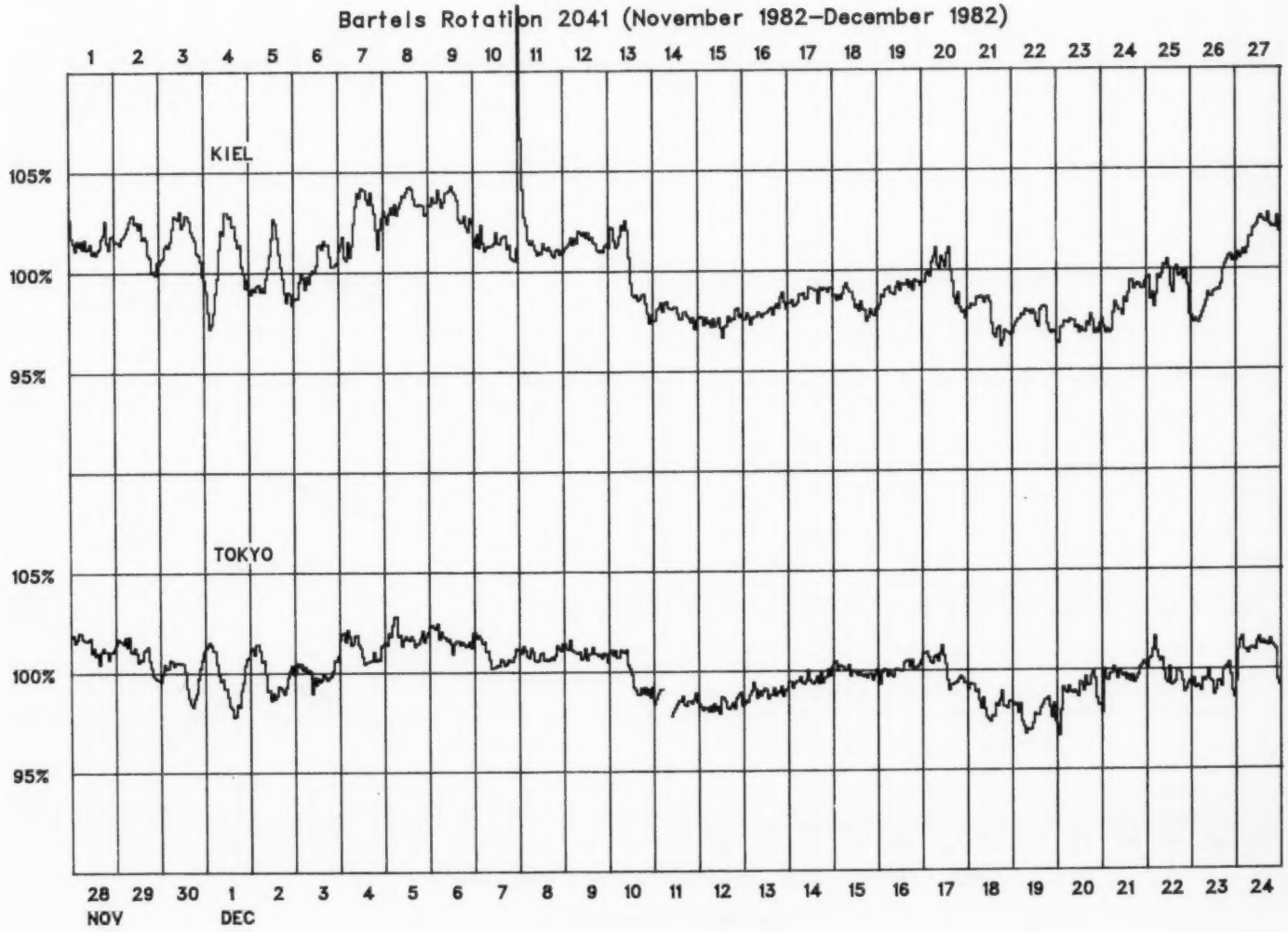
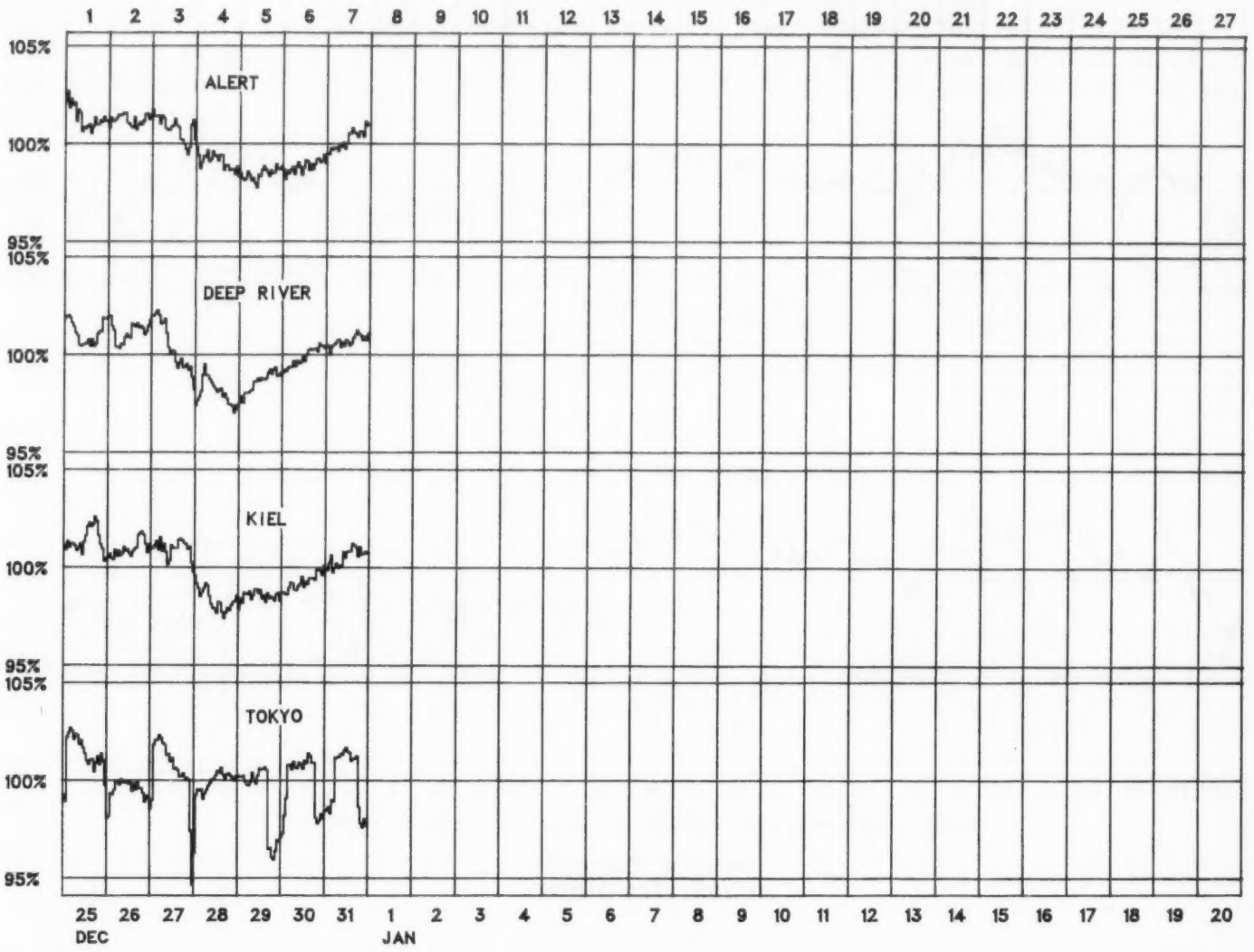
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2041 (November 1982–December 1982)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2042 (December 1982–January 1983)



GEOMAGNETIC ACTIVITY INDICES

DECEMBER 1982

Day		K_p Three-Hourly Indices 1	2	3	4	5	6	7	8	Sum	A_p	C_p	K_m Three-Hourly Indices 1	2	3	4	5	6	7	8	A_m	aa N	S	M	
1	Q1	0+	0	1+	0+	0+	0	1-	0+	3+	2	0.0	1	0+	1+	0+	0+	0+	1-	0+	4	2	4	4	2	CK
2	Q3	0+	0+	0	1	2	1+	1-	1+	7	4	0.1	0	0	0	1	2+	2	1	1+	7	7	8	4	11	CC
3	Q8A	2-	1+	2	2	3-	3	2	3	18-	9	0.5	2-	1+	2	3-	3+	3-	2	3-	20	19	22	17	25	
4		3+	3+	1+	1-	1-	1+	3-	5-	18	13	0.7	3	3-	2	1	1+	2	3	4	23	27	16	15	29	
5	Q9A	4	4	3	1-	1	1	2-	1-	16	11	0.6	3+	3+	3	1-	2-	1+	2	1+	19	19	14	23	10	
6	Q2	1+	1+	1-	1-	1-	1-	0+	1-	6+	3	0.1	2-	2-	1	1	1	1-	1-	1+	8	4	6	7	4	CK
7		0+	3+	3+	2+	5-	4	6+	4	28+	29	1.3	1-	3+	3	2+	5-	5-	6-	4	55	48	58	22	84	
8		4+	4-	4-	4+	4+	4	5-	2+	31+	27	1.2	4	3+	4-	4	5-	4	4	3	52	42	52	41	53	
9		2	3	3-	3+	5+	3+	3-	2	24+	18	1.0	2+	3-	2+	3	5	3	3-	2	31	34	30	22	42	
10	D3	2+	3-	6+	6	5+	5+	5-	4-	36+	46	1.5	2+	3-	5+	6-	5-	5	4+	3+	71	66	77	76	67	
11		4-	4+	2-	2+	2+	4	4	4	26+	20	1.0	3	4-	2	3-	2+	4	4+	4	38	38	25	27	38	
12		3+	2+	2	4	4-	3	2	2	22+	14	0.8	3-	2	2+	3+	3	3	2	2-	23	23	16	20	20	
13	Q4	1+	2	1+	2-	1-	2-	2	3-	13+	6	0.3	1	2-	1+	1+	1	2	2+	3-	13	13	12	10	15	C
14	Q7A	1+	2	1	2-	1	0+	3-	4	14	8	0.5	1+	2-	2-	2-	1+	0+	3	4-	16	17	15	11	22	
15	Q0A	3	3	3+	4-	2	2-	1-	0+	18-	11	0.6	4-	3	3+	3+	2	2	1+	1+	25	21	30	41	10	
16		1	1+	2+	3-	3-	3+	3	4+	21-	13	0.8	2-	2-	3-	3	3-	3+	3+	4-	27	28	20	13	36	
17	D1	4+	5	7+	6	6-	4+	5	4+	42	62	1.7	3+	4-	6+	6	5	4+	5	4+	92	97	61	103	55	
18	D4	5-	4	5	6	5	5-	4+	3-	36+	41	1.5	4	3+	4	6-	5-	5-	4-	3	68	55	67	73	49	
19		4	4	5	6-	5-	3-	3-	5-	33+	34	1.3	5-	4	5	5+	5-	3-	3	5-	71	48	91	94	46	
20	D2	4+	4+	5-	5	6	5	5+	4+	39	46	1.5	4+	4+	4-	4+	5+	5-	5	4+	75	69	77	73	74	
21		3+	4	5-	4+	4	5+	5-	5+	36-	37	1.4	3	4-	4	4	4+	5	5-	4	59	69	52	41	81	
22	D5	7-	7-	3	2+	5-	4+	2	3-	32+	42	1.5	5+	6-	3	3-	4	4	2	2+	55	58	34	55	38	
23		2+	2	3+	5	5-	5-	4	4-	30-	26	1.2	2	2-	3	4+	5-	5-	4	3+	46	38	38	24	53	
24		5-	3-	3+	3+	3+	3+	3+	2+	26+	19	1.0	4	2	3	3	3+	3+	3	2+	31	30	23	27	26	
25		3	3-	3+	2+	3+	4-	2+	1+	22	14	0.8	2+	2+	3	2+	3+	3+	2+	2-	24	24	23	22	25	
26	Q6A	3-	3	2+	2+	3-	2	1+	1-	17	9	0.5	2+	2+	2	3-	3	2	2-	1+	18	16	20	19	17	
27		3-	2	5-	3+	3+	3-	2+	4	25	18	1.0	3-	2-	4+	3+	3	3-	3	3+	32	28	36	33	31	
28		3+	4-	3+	3+	4-	3	4+	4-	28+	21	1.1	3	3+	3-	3	4-	3	4	3	35	34	39	32	41	
29		4-	4	4-	3+	3+	3	4-	3	28-	20	1.0	3	4-	4	3+	3	3	3	3	36	31	41	36	36	
30		4-	4	3+	3+	2	2+	3	2	24-	15	0.9	3	3	3-	3	2+	3-	3	2	25	28	21	29	20	
31	Q5A	3+	2+	1	2-	1+	1	1	2-	13+	7	0.4	3-	2	1+	2-	1+	1+	1-	1+	11	13	10	14	9	C
Mean											21	.90									35.8	33.8	33.5	33.8		

Day	K_n Three-Hourly Indices 1	2	3	4	5	6	7	8	A_n	K_s Three-Hourly Indices 1	2	3	4	5	6	7	8	A_s
1	1-	0	1+	0	0	0+	1-	0	3	1+	1-	2-	0+	1-	0+	1	0+	6
2	0	0	0	1-	2+	2+	1-	1+	7	0	0+	0+	1	2+	2-	1+	1+	7
3	2-	1	2+	2+	3+	3	1+	3-	20	2	2-	2	3-	3	2+	2+	3	20
4	3	2+	2-	1-	1	2-	3-	4	21	3+	3	2	1+	1+	2+	3	4	25
5	4-	3	3	0+	1+	1	2-	1-	18	3+	3+	3	1+	2	1+	2+	1+	20
6	1+	1	1	1-	1-	0+	0	1-	5	2	2	1	1+	1+	1	1	2-	10
7	0+	3-	3-	2+	5-	4+	5+	4	46	1+	4	3+	3-	5-	5	6	4+	64
8	3+	3	4-	4	5-	4	4	3-	48	4+	4-	4-	4	5	4	4	3	57
9	2-	2+	2	3-	5+	3	3-	2-	33	3-	3-	2+	3+	5-	3-	2+	2	30
10	2-	2	5	5+	5-	5	4+	3	64	3-	3	6-	6	5-	5	4+	4-	79
11	3	4-	1+	2+	2	5-	4	4-	36	3+	4-	3-	3-	3-	4-	4+	5-	41
12	3-	2	2+	4-	4-	3	2	2-	25	3	2	2+	3	3-	3-	2	2	21
13	1-	1	1	1+	1	2	2	3-	11	1+	2+	1+	2-	1+	2+	3-	3-	15
14	1	1+	1	2-	1+	0+	3-	3+	13	2	2	2	2	2-	1-	3+	4-	20
15	3+	3-	3	3	2-	2	1+	1	20	4	3+	4-	4-	2	2+	2-	1+	29
16	1	1	3-	3	3	4-	3+	4	29	2+	2+	2+	3	2+	3+	3	4-	26
17	4-	4	7-	6	5	5-	5-	4-	95	3-	4-	6-	6	5+	4	6-	5-	90
18	4	3+	4+	6	5-	5-	4-	3-	70	4+	4-	4	5+	5	5	4-	3	67
19	4	4-	4+	5	5-	3-	3-	4+	57	5+	5-	6-	6-	5	3-	3	5	86
20	4	4	3+	5-	5	5-	5	4	70	5-	5-	4	4	6-	5	5	5-	81
21	3-	4-	4	4-	4+	5	5-	4	57	3+	3+	4	4+	4	5	5-	4	61
22	5+	6-	3+	2	5-	4+	2+	2+	58	5+	5+	3-	3	4-	4	2-	3-	53
23	2+	1+	3	5-	5-	5-	4	3+	49	2	2	3-	4-	4+	5-	4	3+	43
24	4+	2+	3	3	3	3+	3	2	33	4-	2-	3	3	3+	3	3	3-	30
25	2+	2+	3	2	4-	3+	3-	1+	24	3-	3-	3	3-	3	4-	2	2	25
26	3-	2+	2+	2+	4-	2+	2-	1+	20	2	2+	2	3	3-	2	2-	2-	17
27	2+	1+	4-	3+	3	3-	3-	3+	28	3	2-	5-	4-	3+	3-	3	3+	36
28	3	3	3-	3	4-	3-	4-	3	31	3+	4-	3-	3	4-	3	4+	3+	39
29	3	3+	4-	3+	3	3	3	3-	33	3	4-	4	3+	3+	3	3	3	37
30	3	3	3-	3	2+	3-	3	2-	25	3-	3	3	3	2+	2+	3+	2	26
31	3-	2-	1+	1+	1	1	1-	1+	10	3	2+	2-	2	1+	2-	1-	1+	13
Mean									34.2									37.9

The Geophysikalisches Institut, University of Goettingen, prepares the quiet (Q) and disturbed (D) days, geomagnetic planetary 3-hour-range indices (Kp), magnetic character figures (Cp) and average amplitude (Ap). The 10 most quiet days [Q1-Q0(10)] and the five most disturbed days (D1-D5) are ordered from most quiet and from most disturbed, respectively. A or K means "not really quiet" (A implies Ap≥6 and K implies Ap≤6 with either one Kp≥30 or two Kp values ≥3-). An asterisk means "not really disturbed" (Ap<20).

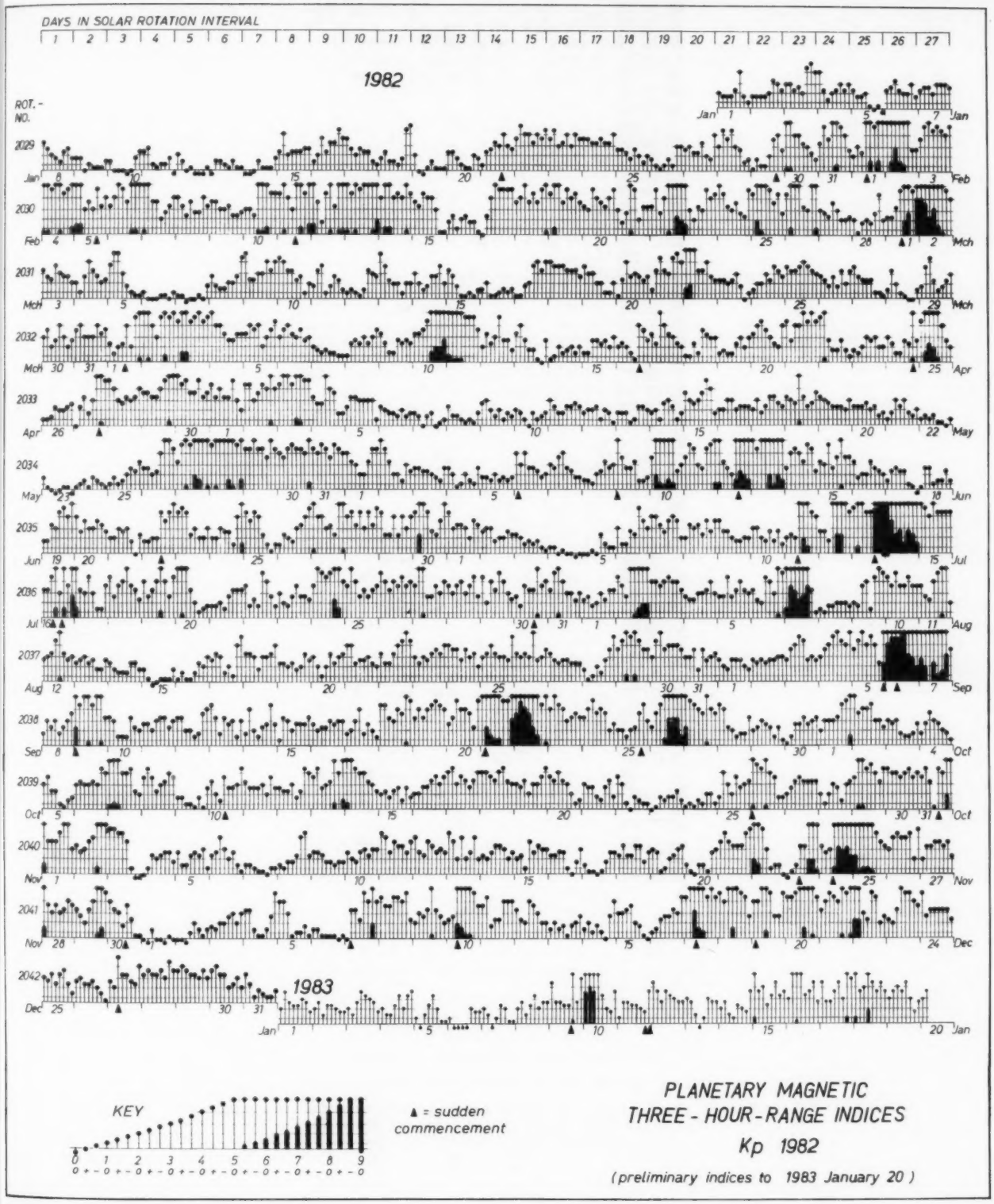
Geomagnetic 3-hour indices Km, Kn, Ks and daily mean values Am, An, As and indices aa are prepared by M. Menvielle of the Institut de Physique du Globe, Paris, France. For aa indices, daily north (N) and south (S) values and half-daily antipodal mean (M) values are given. C indicates really quiet 24- and 48-hour intervals centered on 1200 UT; K indicates similar periods with some slightly disturbed 3-hour intervals.

NOTE: All aa indices are provisional from 1 January 1981 until further notice, because of the change in the Southern Hemisphere observatory.

DAILY AVERAGE INDICES Ap

DAY	1982 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	9	41	68	20	22	20	18	12	9	28	36	2
2	9	60	107	42	30	18	10	55	12	24	32	4
3	20	35	13	48	45	9	6	26	21	10	21	9
4	12	49	12	22	19	7	2	15	32	10	8	13
5	4	37	16	21	14	6	4	18	39	9	9	11
6	10	39	3	18	6	14	15	25	199	19	11	3
7	12	26	3	5	4	14	21	107	88	35	4	29
8	9	18	11	12	5	9	15	6	12	21	12	27
9	4	15	20	10	8	16	10	23	50	6	8	18
10	4	35	16	61	5	51	10	27	10	15	11	46
11	5	45	10	47	9	32	36	28	13	14	20	20
12	2	41	8	15	6	59	48	22	14	15	16	14
13	4	54	13	11	6	62	144	10	15	34	18	6
14	3	42	11	6	8	24	153	7	14	30	12	8
15	12	18	7	10	20	26	36	3	12	8	13	11
16	17	6	4	11	10	10	50	6	12	14	9	13
17	10	30	14	19	12	6	24	16	11	21	6	62
18	13	34	20	12	20	7	24	16	30	23	12	41
19	3	36	10	8	12	24	28	10	28	17	10	34
20	6	26	12	20	8	18	24	12	24	14	6	46
21	14	21	23	32	8	9	11	15	76	11	25	37
22	27	51	38	18	4	20	16	24	135	8	30	42
23	22	29	8	9	2	20	12	17	26	5	36	26
24	21	24	12	15	4	21	50	18	22	5	83	19
25	9	42	20	52	8	17	22	20	13	15	54	14
26	7	43	11	7	24	16	27	20	84	30	26	9
27	13	12	9	24	54	32	27	11	42	16	17	18
28	17	10	6	21	56	27	21	12	14	10	28	21
29	11		13	31	35	19	22	38	9	35	32	20
30	27		15	30	35	39	23	28	12	27	13	15
31	34		20		31		25	16		34		7
Mean	12	33	18	22	17	22	30	21	36	18	21	21

GEOMAGNETIC ACTIVITY INDICES



Symbol											
$\bar{R}$ =	0	1-15	16-30	31-45	46-60	61-80	81-100	101-130	131-170	171...	
R9, C9 =	0	1	2	3	4	5	6	7	8	9	
Cp =	0.0-0.1	0.2-0.3	0.4-0.5	0.6-0.7	0.8-0.9	1.0-1.1	1.2-1.4	1.5-1.8	1.9	2.0-2.5	

DAILY GEOMAGNETIC CHARACTER FIGURES C9 AND 3-DAY MEAN SUNSPOT NUMBERS R9

For explanation and previous years see J. Bartels, Abhandlungen der Akademie der Wissenschaften zu Göttingen, Beitrage zum I.G.J., Heft 3 (1958) (may be requested from Institut für Geophysik, Postfach 876, 34 Göttingen, Germany)

PRINCIPAL MAGNETIC STORMS

DECEMBER 1982

Sta	Geomag Lat	Commencement Day	Time (UT)	Type	SC Amplitudes D (Min)	H (Gamma)	Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges D (Min)	H (Gamma)	Z (Gamma)	End Day	Hour (UT)
HYB	07.6N	02	1100	..	..	..	..	03(5,6) 04(8)	4	3	137	30	05	08
COL	64.6N	07	0329	SC*	- 7	121	--	07(5) 09(5)	7	259	1330	910	09	16
SIT	60.0N	07	0330	SC*	- 2	37 *	4	10(4)	7			570	10	22
WIT	54.2N	07	0329	SC*	- 3 *	12	0	07(7)	7	40	155	100	08	04
FRD	49.6N	07	0330	SC	- 1	18	- 2	10(3,4)	6	31	165	72	12	20
HON	21.1N	07	0329	SC	--	11	5	07(5,6,7)	4	8	67	34	08	23
JAI	17.3N	07	0330	SC	- 5.3	15	- 4			6	220	29	08	21
SHL	14.7N	07	0330	SC	- 0.1	25	3			5	213	38	08	21
UJJ	13.5N	07	0330	SC	- .3	21	- 6			6	218	25	07	21
ABG	09.5N	07	0330	SC	- 0.6	19	- 5	07(5)	7	6	232	30	08	21
HYB	07.6N	07	0330	SC	- 0.3	25	- 2	07(5,6)	7	6	246	34	09	22
GUA	04.0N	07	0329	SC*	--	26	- 17	07(2)	4				08	23
GUA	04.0N	07	1100	..	..	..	..	07(5)	6	10	210	50	08	23
HUA	00.6S	07	0329	SC	1	24	4	07(6,7)	7	15	426	55	07	24
TRD	01.1S	07	0330	SC	- 0.3	44	42			5	305	164	07	21
PMG	18.6S	07	0330	SC	0.5	22	21	07(5,6,8) 08(5,7)09(5)	5	10	190	60	09	21
HER	33.7S	07	0329	..	..	..	..	07(7) 09(5)	5	34	164	139	09	21
GNA	43.2S	07	0331	SC	1.3	5	5	07(7) 08(1)	6	26	140	150	09	00
CNB	43.9S	07	0328	SC*	0.3	30 *	3	07(5,6,7) 08(5)	5	22	152	58	08	23
KGL	56.5S	07	0329	SC	5	19	11	07(5,6,7) 08(5)	7	133	890	370	08	23
HUA	00.6S	08	0039	..	..	..	..	08(5,6)	6	10	236	67	08	22
COL	64.6N	10	05--	..	..	..	..	12(4)	7	200	1560	1050	12	21
WIT	54.2N	10	0721	SC*	- 4 *	45 *	0	10(3,4,5,6,7)	5	24	130	95	11	01
HON	21.1N	10	0719	SC	--	19	8	10(4,5)	5	5	110	34	11	00
JAI	17.3N	10	0718	SC	- 2.1	30	- 10			7	129	41	10	22
SHL	14.7N	10	0718	SC	- 0.2	29	3			6	111	35	10	22
UJJ	13.5N	10	0718	SC	- 1.3	36	- 12			5	145	37	10	22
ABG	09.5N	10	0718	SC	- 1.8	33	- 20	10(4)	6	5	149	49	10	22
HYB	07.6N	10	0722	SC	- 1.3	39	- 5	10(4)	6	4	154	21	12	02
GUA	04.0N	10	0721	SC	--	16	- 4	10(4)	6		120	40	10	24
HUA	00.6S	10	0721	SC	1	40	7	10(5,6)	8	17	460	55	10	22
TRD	01.1S	10	0718	SC	0.2	96	--			3	287	164	10	22
PMG	18.6S	10	0620	SC	0.4	27	28	10(4)	6	5	150	100	12	02
HER	33.7S	10	0722	SC	2	8	7	10(4)	6	25	123	92	10	22
CNB	43.9S	10	0720	SC*	.1	68 *	6	10(3,4)	6	16	171	67	10	22
KGL	56.5S	10	0721	SC	13	16	12	10(6) 11(7)	7	45	504	220	12	12
HYB	07.6N	14	2000	..	..	..	..	14(8) 15(4)	4	4	76	16	15	19
COL	64.6N	16	06--	..	..	..	..	17(3)	9	444	3370	1970	22	19
SIT	60.0N	16	06--	..	..	..	..	17(5)	8				23	21
WIT	54.2N	16	22--	..	..	..	..	17(3)	7	38	325	100	18	20
FRD	49.6N	17	0807	SC	- 5	17	- 2	22(2)	7	55	180	82	25	--
HON	21.1N	17	0806	SC	--	25	8	17(3) 18(4)	6	7	104	26	18	19
JAI	17.3N	17	0806	SC	- 3.0	19	- 7			6	155	32	18	20
UJJ	13.5N	17	0806	SC	- 1.2	23	- 5			5	201	35	18	20
ABG	09.5N	17	0806	SC	- 1.5	19	- 15	17(4,6)	6	7	157	52	18	20
HYB	07.6N	17	0806	SC	- 1.0	24	- 4	17(5)	7	6	206	46	18	23
GUA	04.0N	17	0806	SC	--	18	- 6	18(1)	5		190	30	18	05
HUA	00.6S	17	0806	SC	1	25	5	17(6,7)	7	18	487	70	18	23
TRD	01.1S	17	0806	SC	- 1.0	90	97			5	271	177	18	20
PMG	18.6S	17	0805	SC	0.5	25	20	19(1,3,4,5) 20(1)	6	12	250	170	22	06
HER	33.7S	17	0806	SC	4	9	5	17(3)	6	37	176	124	18	20
GNA	43.2S	17	0850	SC*	5.3	* 51	24 *	17(4)	6	21	120	150	18	20
CNB	43.9S	17	0804	SC	1.3	61	6	17(3) 18(4)	6	23	206	56	18	19
KGL	56.5S	17	0805	SC	17	79	24	17(4,5,6) 18(6)	7	95	568	324	19	01
GUA	04.0N	18	0738	..	..	..	..	18(4)	6		100	20	18	21
HON	21.1N	19	02--	SC	1	47	21	19(8)	6	5	118	55	21	00
JAI	17.3N	19	0254	SC	- 1.7	59	- 16			7	227	33	21	00
UJJ	13.5N	19	0254	SC	--	--	--						21	00
ABG	09.5N	19	0254	SC	- 1.7	62	- 27	19(4)	7	8	238	56	21	00
HYB	07.6N	19	0255	SC	- 1.1	72	- 8	19(4)	7	6	247	38	22	20
GUA	04.0N	19	0100	..	..	..	..						19	20
GUA	04.0N	19	0254	SC*	1	98	- 30	19(1)	6	10	260	50	19	20
GUA	04.0N	19	2219	SC	--	33	- 10	20(1)	6		170	40	20	24

PRINCIPAL MAGNETIC STORMS

DECEMBER 1982

Sta	Geomag Lat	Commencement Time Day	(UT)	Type	SC Amplitudes D (Min)	H (Gamma)	Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges D (Min)	H (Gamma)	Z (Gamma)	End Day	Hour (UT)
HUA	00.6S	19	0254	SC	2	88	15	19(5)	7	12	466	85	20	24
TRD	01.1S	19	0254	SC	- 1.3	129	--			6			21	00
HER	33.7S	19	0254	SC	3	39	32	19(4)	6	31	212	153	21	01
GNA	43.2S	19	0254	SC*	- 7.7	59	* - 25	19(4)	6	29	150	170	21	01
CNB	43.9S	19	0252	SC	1.8	120	18	19(1,3)	6	27	282	80	22	05
KGL	56.5S	19	0253	SC	10	31	11	19(4)	6	45	203	159	19	22
KGL	56.5S	19	2219	SC	11	58	15	20(5)	8	134	1092	417	22	10
WIT	54.2N	20	11--	..	..	..	..	20(5,7) 21(6,7) 22(1)	6	32	175	145	22	06
HER	33.7S	21	17--	..	..	..	..	21(7)	5	21	94	125	22	12
GUA	04.0N	22	0041	..	..	..	..	22(2)	5		140	30	22	08
COL	64.6N	23	07--	..	..	..	..	23(4,5)	7	319	1260	1110	25	19
HYB	07.6N	23	0500	..	..	..	..	23(6)	5	5	149	18	24	20
KGL	56.5S	23	0900	..	..	..	..	23(6)	8	70	616	215	24	03
COL	64.6N	27	0714	SC*	- 7	393	- 74	27(4) 28(3,5) 30(4)	6	124	1320	490	31	13
FRD	49.6N	27	0715	SC	- 1	51	- 8	27(3) 28(7) 29(2)	4	19	102	30	30	06
HYB	07.6N	27	0715	SC	- 0.2	45	- 5	27(3)	6	4	185	26	30	20
GUA	04.0N	27	0714	SC*	--	18	- 5	27(3)	5		100	30	27	18
PMG	18.6S	27	0715	SC	1.4	44	47	27(3)	5	5	110	80	27	18
HER	33.7S	27	07--	..	..	..	..	27(3)	5	21	92	50	27	13
KGL	56.5S	27	0713	SC	14	57	23	28(7)	6		186		29	03

Reports were received from the following observatories:

ALIBAG	HERMANUS	PORT MORESBY
CANBERRA	HONOLULU	SHILLONG
COLLEGE	HUANCAYO	SITKA
FREDERICKSBURG	HYDERABAD	TRIVANDRUM
GNANGARA	JAIPUR	UJJAIN
GUAM	KERGUELEN	WITTEVEEN

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

DECEMBER 1982

PRELIMINARY REPORT ON RAPID VARIATIONS

Sudden Commencements (ssc)

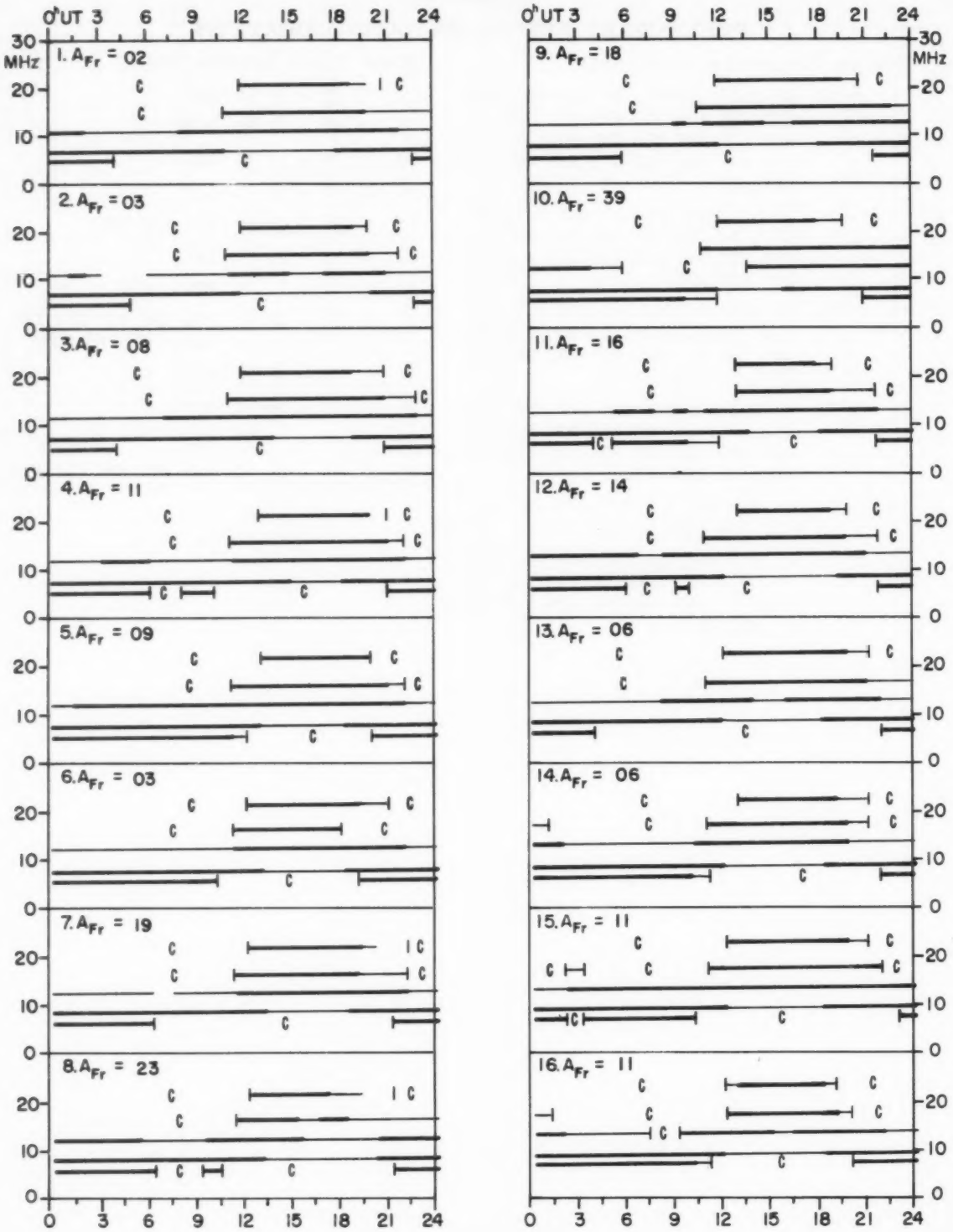
7	03 29	A: SOD COI HUA; B: DOB WNG DOU HRB MMB AQU TOL FRD KAK HTY KNY LNP PMG MPO GNA DUM; C: WIT NGK VAL HAD CLF EBR AMS CZT KGL
10	07 21	A: DOB WNG HAD DOU HRB COI LNP HUA; B: WIT NGK VAL CLF AQU EBR TOL KNY PMG MPO GNA CZT KGL; C: MMB KAK AMS
17	08 06	A: SOD WNG NGK HAD HRB COI LNP HUA MPO KGL DUM; B: DOU CLF MMB AQU EBR TOL FRD KAK KNY GNA AMS CZT; C: VAL HTY
19	02 54	A: SOD COI HTY KNY LNP HUA MPO AMS DUM; B: WNG WIT NGK DOU CLF HRB MMB AQU EBR TOL KAK GNA CZT KGL; C: VAL HAD
19	22 20	B: MMB KAK KNY KGL; C: WNG AMS CZT DUM (si: A: CLF HRB)
27	07 15	A: SOD WNG DOU HRB EBR COI TOL FRD HUA MPO DUM; B: WIT NGK VAL HAD CLF AQU LNP PMG AMS CZT KGL; C: MMB KNY

Solar Flare Effects (sfe)

5	10 00 - 10 06	MPO
7	19 12 - 19 20	HUA?
9	11 25 - 12 25	HAD
10	02 52 - 03 00	LNP
11	04 38 - 05 30	MMB KAK HTY
13	03 15 - 03 24	LNP
14	11 12 - 11 19	MPO
15	01 58 - 02 55	MMB KAK HTY KNY LNP (ssc: B: PMG DUM)
17	01 45 - 01 57	HTY
22	08 26 - 08 40	MPO
26	10 45 - 10 57	MPO
29	06 44 - 07 10	KAK HTY KNY LNP MPO

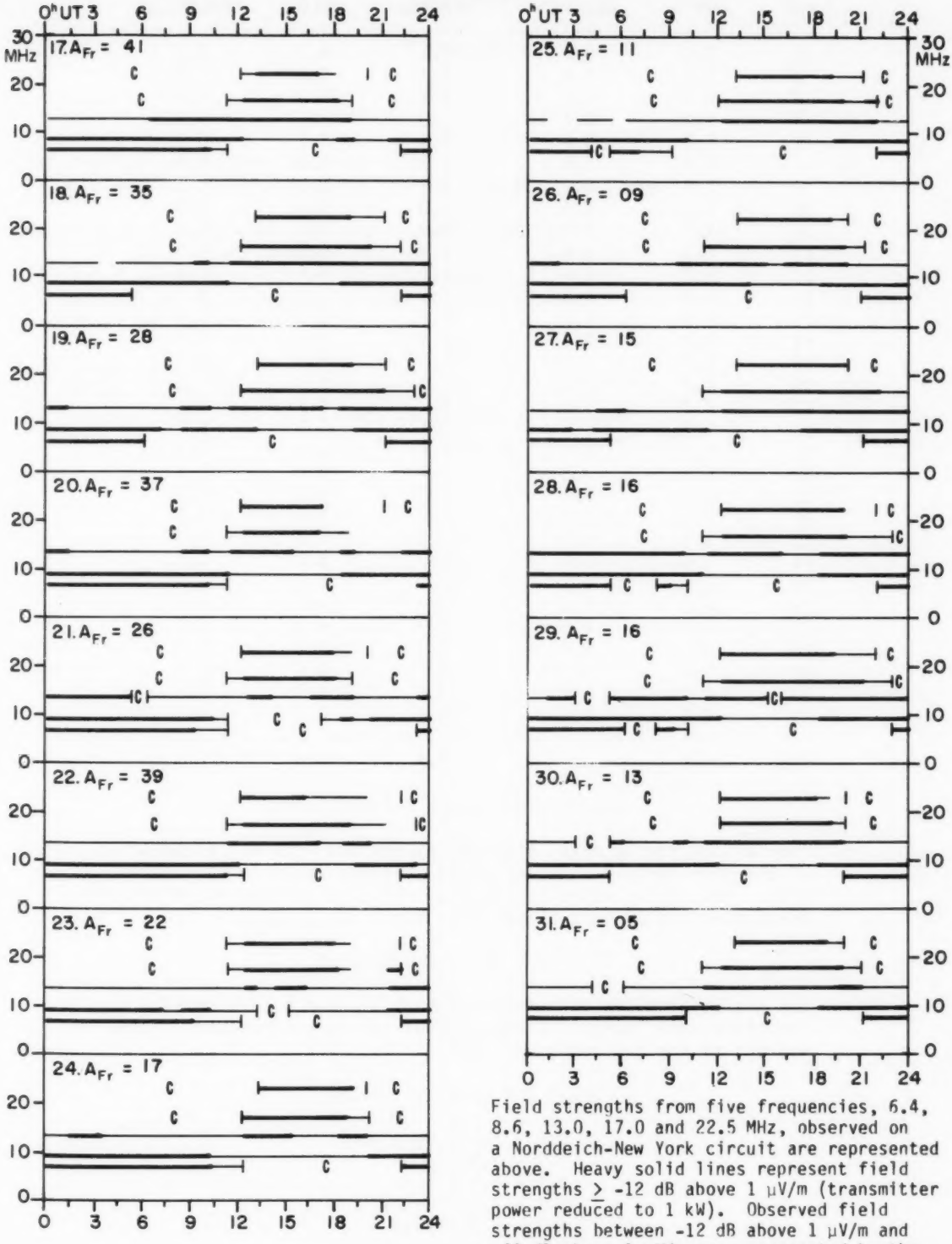
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

DECEMBER 1982



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

DECEMBER 1982



Field strengths from five frequencies, 6.4, 8.6, 13.0, 17.0 and 22.5 MHz, observed on a Norddeich-New York circuit are represented above. Heavy solid lines represent field strengths $\geq$ -12 dB above 1 μV/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μV/m and -40 dB above 1 μV/m are represented by the fine line.

RADIO PROPAGATION QUALITY INDICES

December 1982

DAY	TOKYO	NEW YORK	TEHERAN	OSLO	BRACKNELL
1	3.6	5.6	2.2	4.3	3.1
2	2.7	5.5	5.7	5.0	3.9
3	4.8	6.4	0.9	5.5	5.3
4	5.2	5.7	0.0	6.4	6.4
5	5.6	5.4	5.4	5.1	6.3
6	5.8	5.8	3.7	5.4	5.0
7	3.6	5.2	4.7	6.1	6.5
8	5.1	4.4	0.0	5.8	6.1
9	4.4	5.7	0.0	6.2	6.2
10	4.9	5.4	7.9	6.2	6.8
11	6.2	5.4	2.6	6.9	7.1
12	4.6	4.8	7.3	5.6	5.7
13	4.9	6.2	4.5	5.6	5.4
14	5.3	4.5	2.4	5.3	4.1
15	5.3	6.9	0.6	6.0	4.8
16	4.9	5.7	5.0	6.4	7.3
17	4.3	3.0	4.0	4.4	3.1
18	5.2	5.6	3.5	5.8	5.0
19	5.7	6.0	7.6	6.9	6.4
20	5.2	3.5	7.4	6.8	6.4
21	5.2	2.6	3.8	6.1	5.9
22	4.5	3.2	0.0	3.8	3.0
23	3.9	2.0	0.9	5.8	5.4
24	3.0	3.1	2.0	5.1	3.7
25	3.5	4.1	6.0	4.5	3.8
26	4.3	4.8	1.8	4.2	4.8
27	5.7	6.5	5.9	4.9	5.5
28	4.7	6.2	0.0	5.2	4.8
29	5.0	6.9	5.7	6.6	5.5
30	6.7	6.2	3.5	6.5	4.8
31	5.0	5.6	3.8	5.8	5.2
Mean	4.8	5.1	3.4	5.6	5.3

CALCULATION OF QUALITY INDICES (Q)

From all 24 hourly field strength values and from all frequencies of the same circuit a median field strength value is calculated (FD). This daily value is compared with the average value (FA) of the preceeding 27 days (1 sun rotation).

$$Q = 6.0 + 20 \log(FD/FA)/3.0$$

The quality indices vary from 0.0 to 9.9 where 6.0 is normal. Conditions are "normal" (index = 6.0), if they correspond to the average of the preceeding 27 days.

Scale for Quality Indices

0.0 - 1.0 = very poor
1.1 - 3.0 = poor
3.1 - 5.0 = fair
5.1 - 7.0 - normal
7.1 - 9.0 = good
9.1 - 9.9 = very good

SGD 462 Part I (Prompt)

LATE DATA

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P I O N E E R X I I
(VENUS ORBITER)
INTERPLANETARY MAGNETIC FIELD
MAGNITUDES

November 1982

DAY	TIME	BMAG (GAMMAS)
1	---	---
2	---	---
3	---	---
4	---	---
5	---	---
6	---	---
7	---	---
8	---	---
9	---	---
10	---	---
11	---	---
12	---	---
13	---	---
14	---	---
15	---	---
16	---	---
17	---	---
18	---	---
19	---	---
20	15:30:40	14.48
21	15:32:30	14.10
22	16:19:00	17.00
23	20:01:00	11.58
24	16:21:40	19.20
25	13:34:30	20.90
26	16:28:40	20.90
27	13:33:10	16.22
28	---	---
29	---	---
30	---	---
31	---	---

COSMIC RAY INDICES
(Neutron Monitors)

	June 1982		July 1982	August 1982		September 1982	
	CLIMAX	HUANCAYO	HUANCAYO	CLIMAX	HUANCAYO	CLIMAX	HUANCAYO
1982	Average (cts/h)/100	Average (cts/h)/100	Average (cts/h)/10)	Average (cts/h)/100		Average (cts/h)/100	
1	3807.2	1724.5	1699.3	3491.9	1691.2	3422.5	1681.9
2	3812.2	1727.3	1695.7	3477.6	1689.0	3435.9	1683.9
3	3811.2	1730.2	1695.9	3453.0	1682.7(34)	3445.0	1682.2(36)
4	3811.1	1727.9(38)	1693.1	3454.5	1686.8	3438.0	1689.5
5	3813.8	1728.5	1700.4	3455.2	1688.3	3436.7	1689.0
6	3798.8	1726.0	1688.9	3448.0	1682.6	3297.0	1646.1
7	3777.5	1722.4	1698.3	3340.4	1658.4	3200.7	1633.6
8	3778.7	1715.6	1698.4	3309.2	1654.2	3231.2	1641.1
9	3668.9	1686.6	1705.3	3341.8	1660.9	3260.9	1643.9
10	3585.2	1666.3	1698.4	3321.0	1661.6	3323.2	1653.5
11	3550.6	1667.9	1690.4	3299.4	1658.0	3338.6	1661.2
12	3559.0	1673.0	1655.9	3308.4	1661.7	3347.4	1663.8
13	3461.8	1650.6	1638.4(38)	3344.1	1668.5(38)	3372.1	1668.2
14	3402.0	1646.6	1511.8	3372.2	1672.0	3343.5	1650.5
15	3383.8	1652.3	1557.9	3408.7	1681.8	3389.1(28)	1656.3
16	3402.0	1661.4	1584.8(38)	3427.2	1682.5	3378.7	1654.0
17	3438.4	1673.5	1594.0	3438.9	1676.3	3412.8	1654.7(26)
18	3485.7	1683.6	1613.5	3457.9	1674.3	3433.0	1657.4
19	3533.3	1698.9	1627.8	3458.8	1672.2	3394.4	1660.1
20	3525.0	1695.4	1657.5	3454.2	1669.7	3353.5	1660.3
21	3516.2	1682.6	1664.4	3464.0	1674.2	3221.4	1647.1
22	3534.0	1692.5	1661.1	3474.0	1673.8	3135.6	1625.2
23	3566.0	1707.2	1672.1(38)	3459.1	1674.0	3188.3	1637.8
24	3582.5	1700.4	1672.3	3448.5	1673.8	3229.0	1646.1(36)
25	3587.6	1693.9	1676.3	3439.8	1677.7	3246.9	1647.9
26	3586.4	1693.5	1689.0	3443.6	1677.4	3252.9	1649.7
27	3613.6	1700.6	1695.9	3421.4	1680.1(28)	3284.0	1654.5
28	3612.6	1701.0	1695.7	3416.5	1684.4	3287.5	1657.3
29	3584.9	1698.1	1695.5	3404.5	1683.2	3298.0	1662.0
30	3597.3	1698.1	1690.6	3407.4	1681.5	3327.0	1671.2
31			1686.0	3409.9	1679.3		
MEAN	3607.3	1694.1	1665.0	3414.5	1675.2	3323.1	1657.5

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

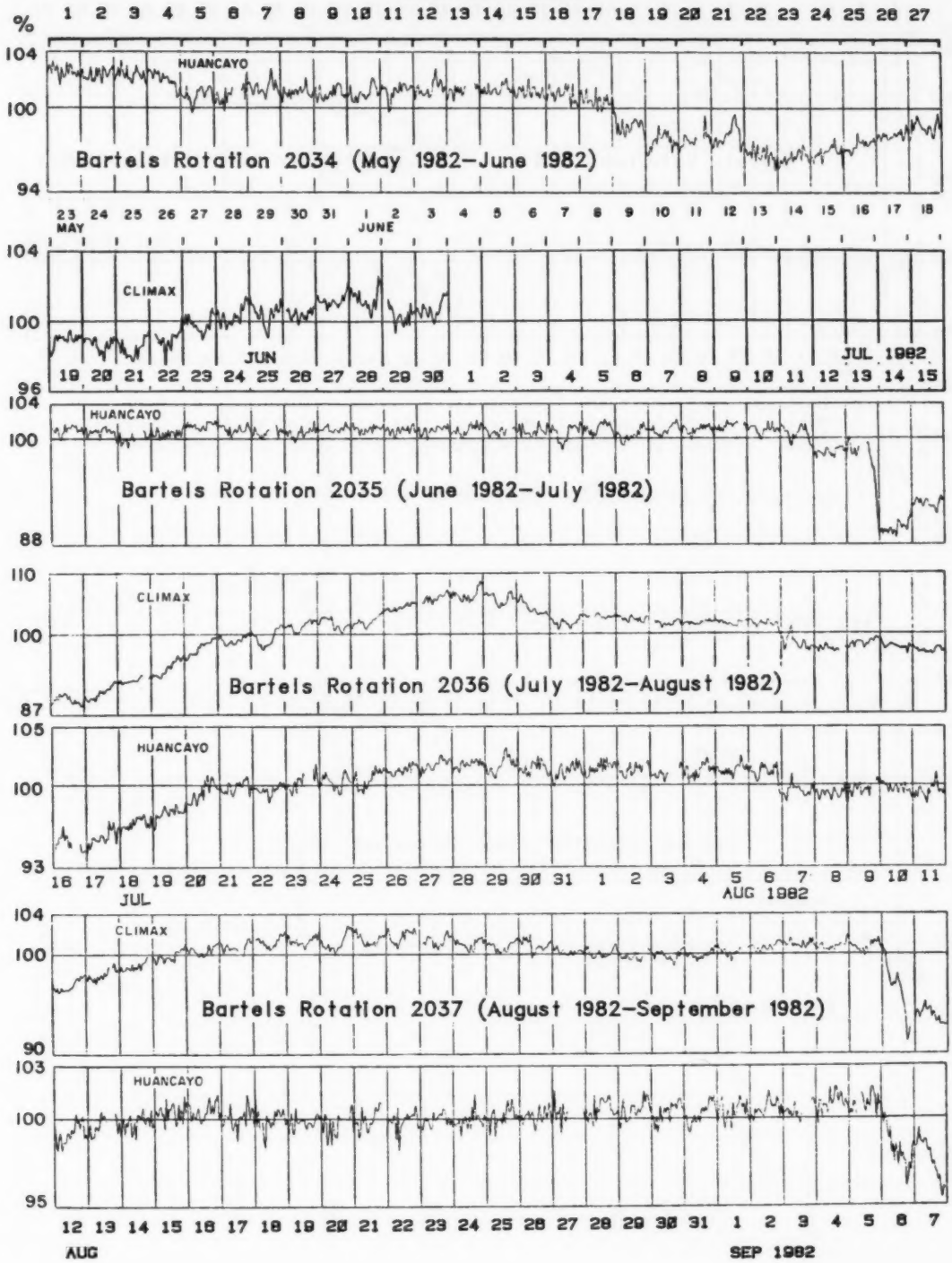
COSMIC RAY INDICES
(Neutron Monitors)

October 1982 — November 1982

1982	CLIMAX Average (cts/h)/100	HUANCAYO Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	CLIMAX Average (cts/h)/100	HUANCAYO Average (cts/h)/100
1	3368.0	1676.9(34)	6097.0	5808.2	3323.5(4)	1681.4
2	3382.8	1679.4	6183.0	5851.9	3404.4(14)	1696.9
3	3361.7	1680.3	6280.8	5905.2	3417.4	1706.8
4	3600.0	1678.7	6325.8	5946.7	3428.5	1704.5
5	3409.5	1677.8	6324.7	5987.6	3442.5	1706.0(34)
6	3354.6(38)	1677.6	6349.3	6013.5	3453.0	1712.7
7	---	1685.5(36)	6391.1	6047.9	3473.2	1716.7
8	---	1687.6	6360.2	6017.1	3460.1	1706.3
9	---	1688.3	6248.2	5937.4	3390.8	1695.1
10	---	1690.1	6249.6	5975.4	3412.8	1695.3
11	---	1688.9	6298.1	5974.0	3445.6	1700.2
12	---	1687.6	6327.5	5977.5	3451.4	1708.9
13	3432.4(10)	1684.3	6335.5	6020.5	3460.9	1714.6
14	3435.8	1693.3	6353.5	6045.9	3452.4	1710.6
15	3411.7	1693.6(36)	6292.8	5985.7	3428.3	1705.8
16	3417.9	1697.7	6291.9	5974.7	3430.1	1703.0
17	3427.4	1702.0	6298.3	5991.2	3436.8	1706.8
18	3398.1	1698.7	6325.5	6024.0	3459.0	1716.2
19	3402.8	1698.7	6383.0	6059.2	---	1723.1
20	3409.1	1700.8	6410.8	6072.7	---	1723.4
21	3416.2	1704.6	6392.2	6048.3	---	1722.6
22	3425.1	1709.3	6396.7	6063.2	---	1727.7
23	3433.2	1714.3	6366.2	6022.0	---	1721.6
24	3444.9	1716.0	6160.9	5840.9	3342.8(12)	1702.3
25	3464.5	1718.9	6053.5	5719.9	3287.2	1677.6
26	3428.3	1712.4	6315.8	5944.8	3425.5	1698.8
27	3413.8	1702.1	6333.7	6008.0	3462.9	1714.3
28	3419.9	1704.9	6291.5	5982.9	3460.9	1712.4
29	3385.9	1700.3(32)	6253.2	5943.3	3463.1	1712.7
30	3369.0	1699.8	6330.4	5952.0	3435.6(30)	1705.0
31	3347.7	1688.4				
MEAN	3414.9	1694.9	6300.7	5971.4	3433.1	1707.6

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

COSMIC RAY INDICES
(Neutron Monitor)



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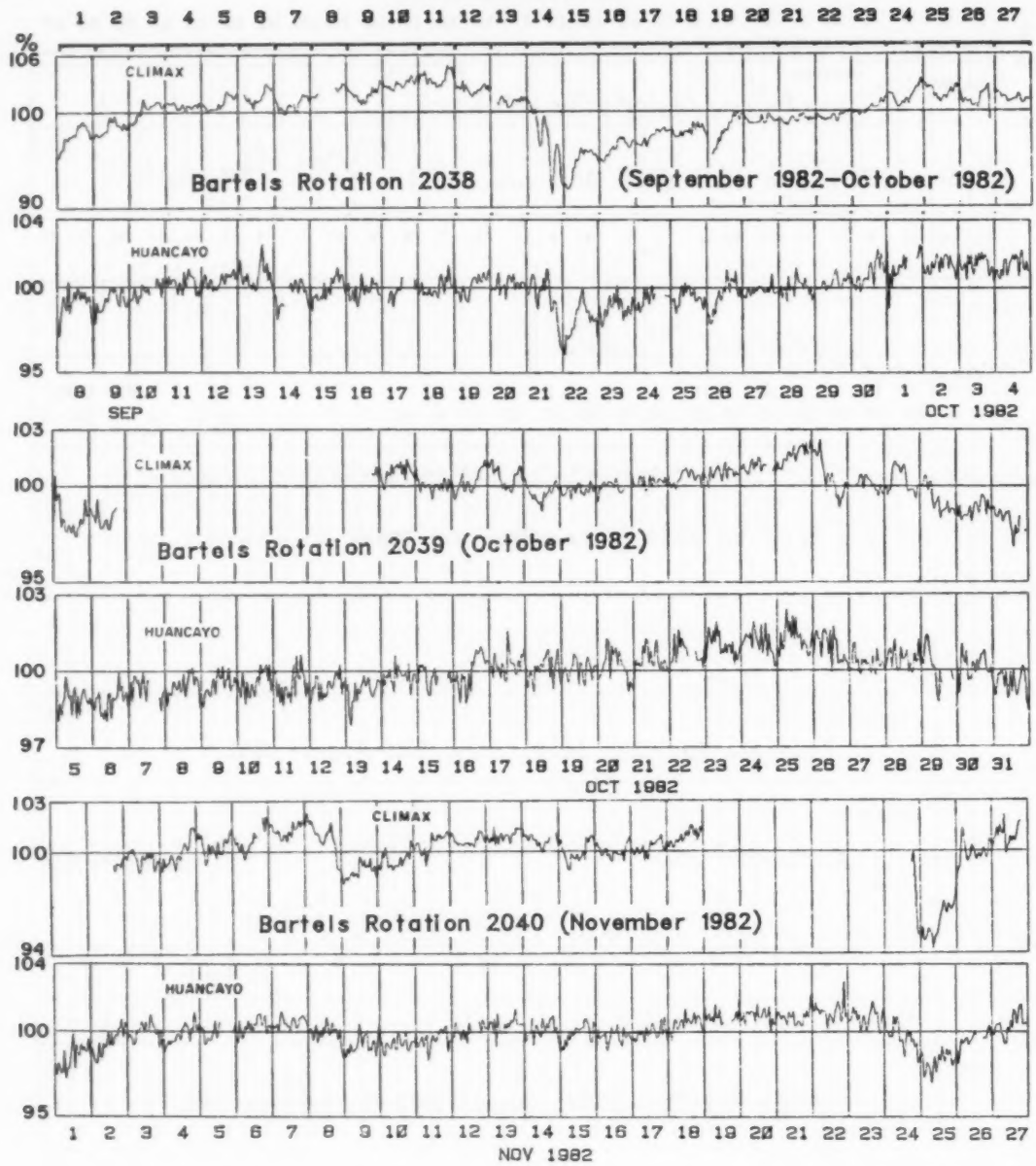
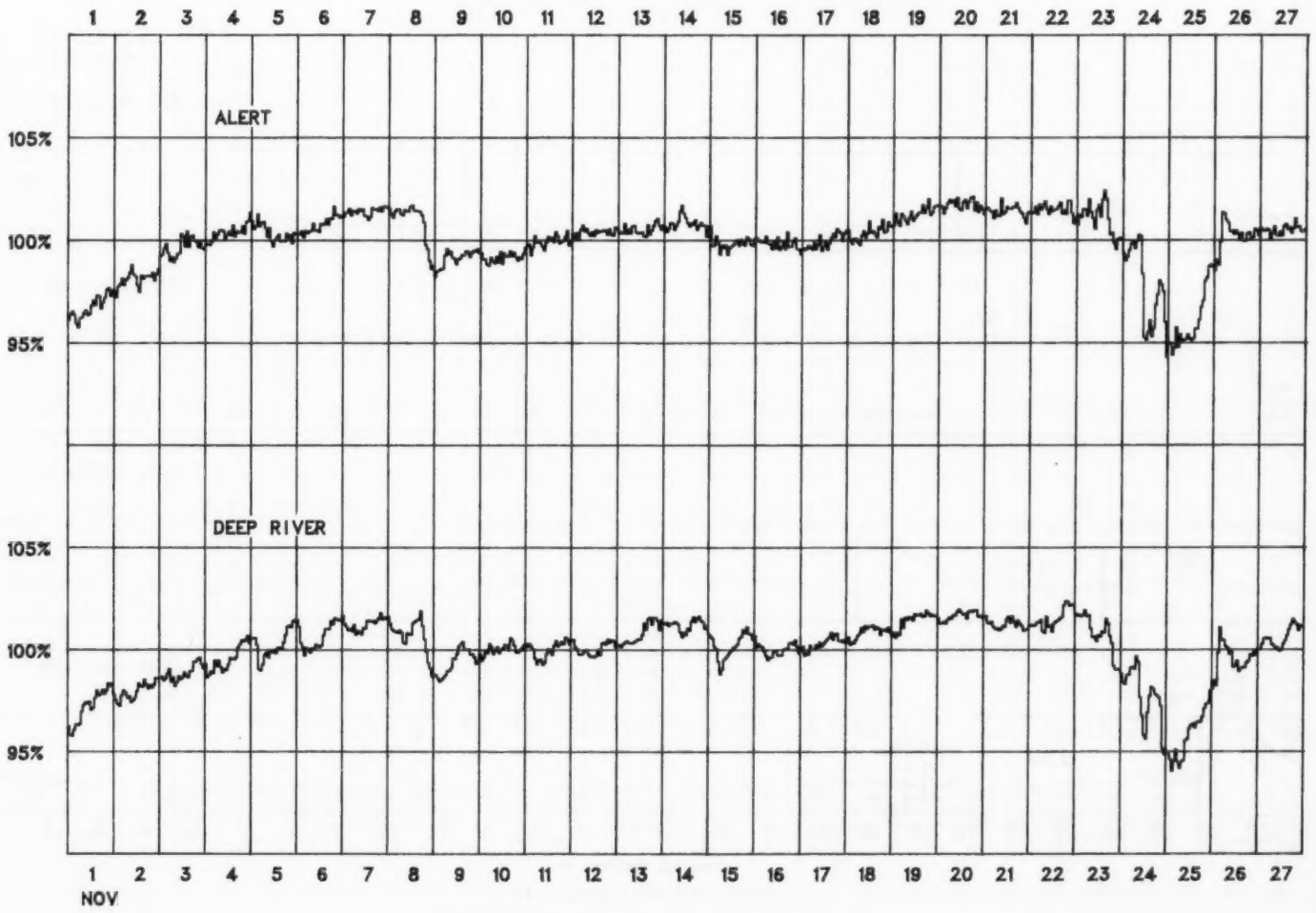
COSMIC RAY INDICES
(Neutron Monitor)



COSMIC RAY INDICES
(Neutron Monitor)

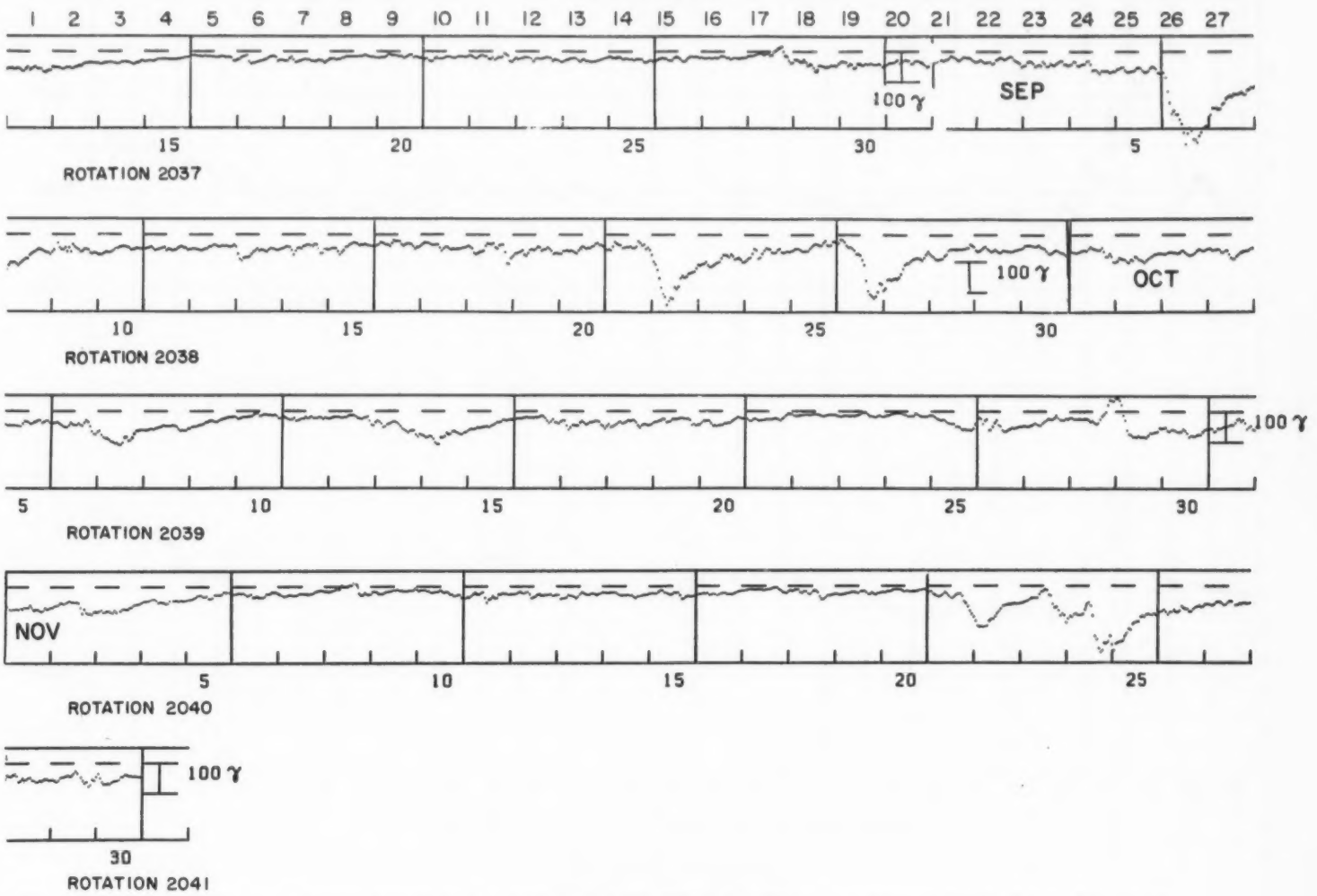
Bartels Rotation 2040 (November 1982)



GEOMAGNETIC ACTIVITY INDICES

Hourly Equatorial Dst

by Bartels Rotation



Note: Both the sensitivity indicator placed on the last day of the month and the zero reference level change from month to month.

Note: Both the sensitivity indicator placed on the last day of the month and the zero reference level change from month to month.

HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

NASA/GODDARD SPACE FLIGHT CENTER

OCTOBER 1982

(Time-UT)

(Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-55	-58	-59	-60	-56	-53	-51	-50	-53	-45	-39	-44	-47	-48	-51	-49	-42	-55	-72	-71	-63	-71	-89	-90
2	-65	-75	-78	-80	-82	-88	-91	-81	-84	-71	-73	-80	-82	-86	-91	-84	-78	-73	-70	-65	-64	-61	-62	-62
3	-64	-64	-59	-57	-58	-60	-60	-63	-59	-53	-52	-59	-64	-68	-67	-65	-60	-53	-47	-50	-54	-52	-48	-45
4	-45	-51	-50	-50	-47	-50	-58	-59	-53	-52	-65	-76	-80	-79	-70	-64	-59	-56	-54	-53	-52	-46	-44	-43
5	-47	-46	-47	-47	-47	-48	-49	-50	-41	-33	-34	-37	-42	-40	-36	-33	-30	-30	-39	-35	-31	-32	-38	-40
6	-39	-38	-36	-41	-45	-50	-52	-53	-47	-38	-44	-46	-45	-40	-46	-48	-38	-31	-36	-50	-67	-75	-76	-68
7	-64	-78	-86	-89	-89	-94	-100	-101	-106	-104	-110	-110	-103	-85	-84	-97	-94	-86	-73	-65	-64	-62	-61	-62
8	-63	-62	-59	-58	-61	-57	-55	-52	-50	-46	-49	-49	-49	-48	-46	-48	-51	-60	-65	-62	-64	-63	-57	-56
9	-51	-50	-50	-48	-45	-44	-42	-37	-36	-32	-31	-33	-36	-35	-31	-28	-26	-24	-22	-20	-20	-19	-19	-21
10	-27	-24	-21	-20	-21	-19	-18	-17	-12	-7	-7	-17	-16	-12	-11	-13	-13	-14	-16	-12	-17	-24	-25	-22
11	-20	-24	-28	-29	-29	-23	-33	-31	-28	-25	-25	-20	-25	-22	-18	-24	-23	-23	-20	-22	-27	-21	-24	-25
12	-23	-21	-19	-19	-19	-22	-23	-20	-21	-16	-13	-14	-14	-18	-23	-25	-27	-22	-21	-18	-32	-45	-47	-36
13	-31	-35	-41	-53	-50	-43	-41	-38	-34	-34	-38	-43	-50	-58	-62	-66	-71	-65	-63	-63	-77	-84	-75	-78
14	-80	-86	-85	-81	-83	-91	-103	-108	-108	-85	-85	-82	-71	-76	-74	-66	-65	-69	-72	-75	-76	-70	-68	-65
15	-60	-58	-59	-58	-53	-55	-53	-51	-50	-49	-53	-48	-44	-41	-36	-36	-34	-28	-28	-31	-28	-27	-27	-25
16	-24	-23	-23	-23	-21	-20	-21	-22	-21	-22	-20	-21	-19	-15	-17	-23	-32	-40	-34	-27	-37	-38	-41	-34
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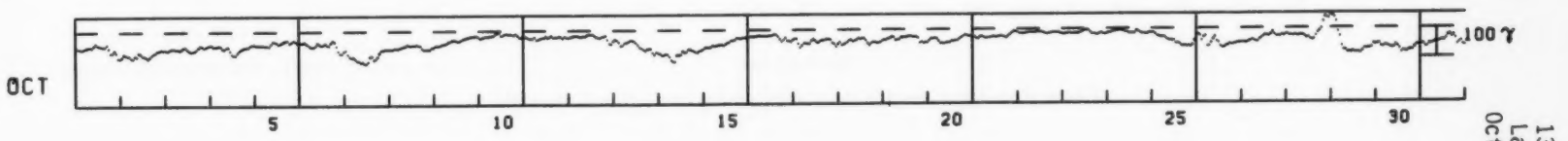

HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

NASA/GODDARD SPACE FLIGHT CENTER

NOVEMBER 1982

(Time-UT)

(Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-68	-76	-78	-76	-75	-74	-77	-71	-75	-69	-71	-69	-61	-70	-78	-75	-76	-79	-83	-79	-70	-75	-72	-70
2	-69	-64	-62	-61	-54	-53	-57	-54	-50	-47	-51	-51	-52	-51	-54	-71	-89	-75	-86	-90	-89	-92	-83	-84
3	-84	-80	-77	-85	-84	-81	-81	-85	-87	-79	-85	-89	-80	-75	-73	-76	-74	-69	-67	-61	-59	-58	-57	-55
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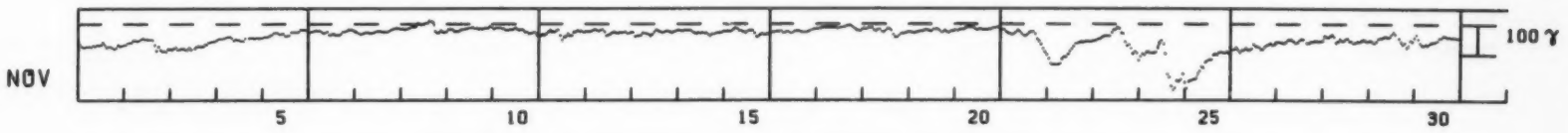

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